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ABSTRACT

This document reports the findings of a survey of EE (environmental education) coordinators in all 50 states and the District of Columbia in order to better understand the current practice of EE teacher inservice education and to identify critical, future directions for inservice programs. Survey results suggest there are vital gaps. To improve the quality and scope of EE teacher inservice education, and ultimately EE for students K-12, efforts are needed that: (1) promote EE staff development, (2) communicate more effectively the interdisciplinary nature of EE, (3) involve a greater diversity of teachers and trainers, and (4) link EE with the priorities of state education agencies through education reform. Appendices include the summary of results from each state and the questionnaire used in the survey. (Author/MKR)

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Prepared by Kim Wade

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National Survey of EE Teacher Inservice Education

ABSTRACT

NCEET staff surveyed environmental education (EE) coordinators in all fifty states and the District of Columbia to understand better the current practice of EE teacher inservice education and to identify critical, future directions for inservice programs. Survey results suggest there are vital gaps. To improve the quality and scope of EE teacher inservice education, and ultimately EE for students K-12, efforts are needed that: (1) promote EE staff development, (2) communicate more effectively the interdisciplinary nature of EE, (3) involve a greater diversity of teachers and trainers, and (4) link EE with the priorities of state education agencies through education reform.

INTRODUCTION

"Too often, teachers and their needs have been overlooked in the rush to make changes in schools."[1]

While a growing amount of environmental education (EE) programs and curricula exists for students K-12, there has not been a corresponding focus on EE training and support for teachers. There are too few EE staff development opportunities for teachers and very little systematic information on the nature and effectiveness of the programs that are in place.[2] Greater efforts to understand and address the EE inservice needs of teachers are critical given that educating teachers is key to promoting EE in classrooms.

To address the need for information on EE inservice education, the National Consortium for Environmental Education and Training (NCEET) surveyed EE coordinators in all fifty states and the District of Columbia. NCEET chose to explore state level needs and perspectives because of the significant variation in staff development requirements among states.

The intent of the survey is to inform efforts to: (1) improve EE inservice education, and (2) increase teacher access to and participation in EE training.

NCEET hopes this report will spark increased dialogue both within and across the states – that it will provide useful ideas and contacts to state EE coordinators and others working on behalf of teachers and students K-12 to improve and expand EE inservice education.

METHODS

SURVEY INSTRUMENTS

The survey consists of two parts. Telephone interviews were conducted May through July 1993 with EE coordinators from all fifty states and the District of Columbia. The interviews generated anecdotal answers to survey questions.[3] Respondents were asked to describe state-wide coordination of EE inservice programs, to identify key inservice providers and hard-to-reach audiences, and to discuss state-level needs. NCEET staff sent written summaries of the interviews to respondents to be edited for accuracy. Information marked confidential by respondents was removed from summaries. Forty-five of fifty-one interview summaries (88%) were returned (Appendix A).[4]

A written questionnaire (Appendix B) was developed to quantify and verify results of telephone interviews. The questionnaire was distributed August 1993, and state

EE coordinators were contacted twice during Fall 1993 to increase the response rate. Forty-three of fifty-one questionnaires (84%) were returned. Results are reported with descriptive statistics (means, percentages, standard deviations).

RESPONDENTS

Names of likely participants were obtained from a published list of EE coordinators at state education agencies.[5] Those not familiar with EE inservice education in their state were asked to recommend another state-level contact.[6] Forty-three respondents are with state education agencies, five with state natural resource agencies, two with universities, and one with a state-wide professional EE association.[7] The average number of years respondents have worked in their current position is eight.

As indicated by job titles (Table 1), EE is only part of most respondents' job responsibilities. Primary responsibilities related to EE include: developing and delivering EE inservice programs, training inservice providers, and "statewide encouragement and coordination of EE." There is considerable range in the amount of time respondents allocate to EE responsibilities, including EE inservice programs: 48% allocate less then half of their time to EE, while 43% allocate over three quarters of their time to EE.

RESULTS

Survey results are presented in this section according to key findings about EE inservice education. Vignettes extracted from the telephone interviews are included to highlight creative EE inservice efforts. A discussion of implications and links between findings follows this section.

FINDING 1

State-level coordination of EE inservice education is largely informal.

According to respondents, there are no state board of education requirements for EE inservice education.[8] Similarly, none of those surveyed report a legislative mandate that explicitly targets EE inservice education. A few legislative mandates *indirectly* encourage EE staff development:

(1) The Florida Environmental Education Act of 1989 directs the Department of Education to support teachers in their EE efforts.

(2) The Texas legislature mandated, in 1991, the formation of the Texas Environmental Education Advisory Council, which subsequently decided that supporting EE inservice education was its mission.

(3) The Kentucky Environmental Literacy Act of 1990 created the Environmental Council to "provide leadership and planning for EE" including the area of EE inservice education. The Act also calls for all state universities to establish EE centers that offer EE inservice training.

Fifteen of those surveyed report that EE efforts in general, and EE inservice programs in particular, are coordinated by voluntary councils or associations (Figure 1).[9] In most cases, these councils seek more to improve communication and networking among various organizational and individual inservice providers than to formally coordinate efforts.

Seven respondents report that their state legislatures have recently mandated the creation of councils to coordinate or advise EE efforts and/or EE inservice programs (Figure 2). Both voluntary and mandated advisory councils appear constrained by lack of funding and staff support. However, voluntary associations

Figure 1. Examples of Voluntary State-Level EE Advisory Bodies

Illinois	The Illinois Conservation Education Advisory Board includes representatives of state natural resources agencies and the state education agency.
Kentucky	The Kentucky Association for Environmental Education seeks to build cooperation among individuals involved in EE around the state and was instrumental in passage of the Kentucky Environmental Literacy Act in 1990.
Maine	Maine Earth Minders is an umbrella group with members from the Department of Education, state natural resource agencies, non-profit organizations, the Maine Environmental Education Association and others.
Utah	The Utah Society for Environmental Education has both organizational and individual members. Coordination efforts include the EE Teacher Network to inform teachers of EE workshops (Vignette 3).
Wisconsin	The Wisconsin Environmental Education Consortium "is an informal committee representing EE interests in Wisconsin. We convene as representatives of agencies and organizations that perform statewide roles in EE, in order to support environmental educators in their teaching, foster excellence in the profession, and promote environmental education of Wisconsin citizens."[10]

Figure 2. Examples of Mandated State-Level Coordinating Bodies

Florida	The Florida Environmental Education Act of 1989 established the Interagency Coordinating Council for Environmental Education, but the council was later removed from the legislation and has not been reinstated. The group continues to meet voluntarily as the State Committee for Environmental Education (SCENE).
Georgia	In 1993, the Georgia Legislature established and funded the Environmental Education Council. Attempts to organize the Council are underway.
Kansas	The Kansas Advisory Council for Environmental Education (KACEE) was formed in 1969 as a broad-based, voluntary membership organization. An Environmental Education Resolution passed by the Kansas Legislature in 1978 urged recognition of KACEE as the official EE advisory body to the Kansas State Board of Education. Communication between KACEE and the Board of Education appears to be minimal.
Kentucky	The Environmental Council was created by the 1990 Kentucky Environmental Literacy Act to provide EE leadership and planning in program development, preservice and inservice training, and research. A year passed before council members were appointed, and the budget for the Council was eliminated in April 1992. Efforts are underway to revive the Council and to allow the current governor to appoint new members.
Louisiana	In 1993, the legislature created the Louisiana Environmental Education Commission to establish guidelines and timetables for state-wide EE efforts.
Texas	Texas Environmental Education Advisory Council (TEEAC) was established in May 1991 to develop EE materials for teachers, students, and school administrators. TEEAC was not funded, however, and eventually obtained 501(c)(3) status in order to fundraise and to accept corporate gifts (Vignette 1).

seem to be more durable, while those mandated by state legislatures seem particularly vulnerable to unreliable government support. The histories of each of the legislatively-mandated councils are unique, but all report difficulty with getting established and obtaining funds.

Other state-wide coordinating efforts include the following:

(1) State education agencies in four states actively coordinate EE in general and inservice education in particular (Finding 2).

(2) In Arizona, the state legislature mandates interagency cooperation on EE.

(3) Oklahoma state law charges the state Conservation Commission with responsibility for coordinating the EE efforts of the state's regulatory and non-regulatory environmental-related agencies.

The majority of respondents, including those with mandated or voluntary state-wide coordinating councils, characterize coordination of EE inservice education in their state as "non-existent," "piecemeal," "inconsistent," "scattered," or "informal."

FINDING 2

EE inservice education is not a high priority among most state education agencies.

EE inservice education is a low priority for most state education agencies. Overall, state education agencies are not committed to high levels of staffing for EE, not responsible for state-wide coordination, and not largely involved in creating or delivering EE inservice programs.

Agency Staffing

Thirty-two respondents (63%) have job titles that indicate partial or primary responsibility for areas other than EE and/or conservation education (Table 1). Additionally, 48% of respondents devote less than half of their time to EE-related efforts.

VIGNETTE 1. Texas: Coordinating EE Inservice Efforts

The Texas Environmental Education Advisory Council (TEEAC) was established in May 1991 to develop EE materials for teachers, students, and school administrators. However, TEEAC was not allocated funding. Rather than remain dependent on unreliable future legislative allocations, the council obtained 501(c)(3) status, enabling it to fundraise and to accept corporate gifts. TEEAC now coordinates staff development efforts across the state. It initiated the Environmental Educators Recognition Certificate, a voluntary award program for teachers. Under this program, inservice providers submit workshop proposals to TEEAC for endorsement, which allows them to offer teachers credit toward the recognition certificate as an incentive for workshop attendance. Teachers who earn the certificate are recognized in their communities' local papers and in their personnel files.

In several cases respondents report a trend within their own state education agencies to consolidate responsibilities and to replace specialists with generalists. They believe this trend has lowered the priority these agencies place on EE: positions involving oversight of EE have either been eliminated or the state coordinator's responsibilities have been changed so that EE is no longer primary.

TABLE 1. – Terms Contained in Professional Titles of Respondents (*N* = 51)

Term(s) in Professional Title	*n*	%
environmental education	17	33
science/math	14	28
science/math and EE	5	10
conservation education	1	2
conservation education and EE	1	2
general or functionally-related [a]	13	26

[a] This category includes titles like Educational Consultant, School Support Team Member, Early Childhood Specialist.

Coordination of EE Inservice Programs

Most respondents report that coordination of EE inservice education is largely informal or non-existent (Finding 1). Of fifty-one respondents, only four say their state's education agency is actively responsible for *coordinating* EE inservice education; each of these states has a funded Office of Environmental Education:

- The *Pennsylvania* state education agency is the hub of the coordination network.
- In *Hawaii*, coordination occurs at all levels, including the state education agency which trains cadres of master teachers in EE to assist districts and schools.
- Coordination in *Florida* is accomplished primarily through the state education agency's five regional EE service projects (RSPs) which sponsor or co-sponsor trainings, recruit teachers, and help teachers obtain inservice credit.
- The *Washington* Office of Environmental Education serves as a clearinghouse, coordinates workshops, and pilots projects in different regions of the state.

While most state education agencies do not actively coordinate EE inservice efforts, some participate in what respondents characterize as "informal" coordination. Respondents from New Hampshire, California, and Maryland say informal coordination in their states involves: availability of networking opportunities, frequent communication among state agencies, and efforts by state EE coordinators to facilitate interaction among EE inservice providers.

Additionally, some respondents who report that the education agency is not responsible for coordinating EE inservice programs also report that their own job duties include "assisting other state agencies," "statewide encouragement and coordination of EE," "coordinating between other state agencies," "coordination of EE statewide," and "providing linkages."

One respondent's description is representative of most states. He says EE efforts in his state are "scattered and would be better if coordinated." The education agency is:

> *"trying to get more involved in it [EE], but a lot hinges on the USEPA's grant applications. If we see information about curricula that one agency puts out, we try to notify other agencies that could use it. More than anything, we're trying to facilitate their [other agencies'] efforts, whether it's putting on workshops, developing curricula, or providing speakers."*

Provision of EE Inservice Programs

Respondents report that state education agencies are less involved in creating and delivering EE inservice training than other organizations (Table 2). One respondent, for example, says most EE inservice providers "bypass the state education agency and go directly to schools." State natural resource agencies, colleges and universities, non-profit organizations, and school districts all rate higher than state education agencies as providers of EE inservice training.

TABLE 2. – Extent to Which Groups Create and Deliver EE Staff Development Programs in Respondents' Own States (*N* = 43)
(Scale: 1= none; 5 = primary)

Agency/Organization	Create (Mean)	(SD)	Deliver (Mean)	(SD)
state natural resource agencies	3.5	0.9	3.7	1.0
non-profit organizations	3.2	0.9	3.3	0.9
colleges and universities	2.9	1.1	3.0	0.9
school districts	2.9	0.9	2.9	0.8
federal natural resource agencies	2.9	0.8	2.5	1.0
regional/county natural resource units	2.7	1.0	2.4	1.0
state education agency	2.6	1.3	2.6	1.1
for-profit organizations	2.3	1.2	2.2	1.1
regional education service centers	2.1	1.0	2.4	1.0

Several factors limit state education agency involvement in EE staff development efforts:

- *Limited funding and personnel.* EE efforts by state education agencies are poorly funded. One respondent says "lack of time and manpower" limit agency involvement. Another reports that inadequate funding makes the state education agency the "weak link" in EE inservice training. Several express regret that limited money and personnel prevent their agencies from adequately addressing teacher demands for EE inservice workshops.
- *Local school district control.* Local districts are responsible for staff development in many states. Colorado school districts design their own staff development plans and submit these to the education agency for approval; Alabama school districts set re-certification standards; continuing education credit is approved by school districts in Kansas, Louisiana, Nebraska, and New Hampshire; in Maine, teachers work through Peer Support Teams to develop individualized continuing education plans.
- *Sufficient level of existing providers.* Some agencies choose to support others' efforts. The Washington Office of Environmental Education, within the Office of the Superintendent of Public Instruction, decided to keep the number of inservice workshops it provides to a minimum because an active network of providers already existed. Similarly, the Texas Environmental Education Advisory Council (TEEAC) chose to support and improve existing efforts after discovering a substantial number and variety of existing providers.

FINDING 3

State natural resource agencies are the most prominent providers of EE inservice programs.

The relative importance of different EE inservice providers varies from state to state: respondents from western states note a higher level of involvement by federal natural resource agencies than respondents from eastern states. In some states there are no regional education service centers, while in other states the service centers play a key role in helping school districts design and implement staff development plans. Despite the variation, respondents rate state natural resource agencies as the most prominent providers of EE inservice programs (Table 2). Examples include:

- State law recently granted the Oklahoma Conservation Commission, a state natural resource agency, responsibility for coordinating EE statewide. The agency was given this authority largely due to its history of involvement in local communities through soil and water conservation districts.
- The Delaware Department of Natural Resources and Environmental Control allocates more money to EE than any other Delaware state agency.
- The vast majority of EE inservice opportunities in Missouri are provided by two state natural resource agencies: the Department of Natural Resources and the Department of Conservation.

FINDING 4

Project Learning Tree (PLT) and Project WILD, two nationally developed programs, account for a majority of delivered EE inservice programs.

When asked to name the three most widely-attended workshops in their state, 80% list Project WILD, Project Learning Tree (PLT), or both. Over half of respondents indicate that Project WILD and PLT account for the majority of EE inservice workshops attended by their states' teachers. A few respondents have records for participation in PLT or Project WILD; the Delaware respondent, for example, says that 20% of the state's 6,000 teachers have attended Project WILD workshops. However, respondents are rarely able to provide this information for other programs.

FINDING 5

EE inservice workshop facilitators are knowledgeable about environmental content but lack sufficient background in pedagogy.

Respondents feel EE inservice providers are more knowledgeable about environmental issues and content than about educational issues and practices (Table 3).

TABLE 3. – Skills Teacher Trainers Need to Improve Upon Most as Perceived by Respondents ($N = 43$)
(Scale: 1=no improvement needed; 5=substantial)

Skills	Need for Improvement (Mean)	(SD)
workshop facilitation skills	3.1	1.1
ability to model good teaching skills	3.2	1.2
understanding of classroom teaching	3.2	1.2
pedagogical skills	3.2	1.2
knowledge of EE content	2.7	1.2
knowledge of environmental issues	2.8	1.3

Specific skills that respondents feel inservice providers need to improve upon most include: ability to model good teaching, understanding of classroom teaching, workshop facilitation, and pedagogy.

More specifically, respondents feel it is important for EE inservice providers to:

- "understand where teachers are coming from – their classroom background" including demands placed on teachers to cover large amounts of materials.
- "be ready to stretch the paradigm of what the classroom is about" such as participatory learning.
- be better able to demonstrate or to "provide imagery" on practical ways teachers can "integrate" and "infuse" environmental education into the classroom.
- provide follow-up support to help teachers *implement* EE in the classroom and school-wide.

Respondents feel EE inservice providers should be "credible educators" for two reasons: (1) to be more effective as teacher educators, and (2) to further the goals of school districts, state standards, and education reform initiatives.

Having EE inservice providers who are well-versed in educational trends is critical because respondents feel that general interest in education reform motivates teachers to attend EE inservice training. They describe the motivation as "professional updating to keep in step with the reform movement," or the desire to "keep current," or to "offer the best for their [teachers'] kids." The Florida respondent, for example, attributes increased interest in EE to a state reform effort that emphasizes teaching across the curriculum and experiential learning. Others feel that the emphasis science education reform places on hands-on learning generates teacher interest in EE inservice training.

FINDING 6

Despite the expressed belief that EE is interdisciplinary, in practice it attracts more science than non-science educators.

Overwhelmingly, respondents agree that science teachers are far more likely to attend EE inservice training than teachers from any other discipline. Furthermore, teachers in life sciences attend EE inservice workshops more often than physics or chemistry teachers. Interestingly, some respondents say they frequently define EE as environmental science because more funding is currently available for natural sciences than for social sciences.

Why doesn't EE find its way into non-science classrooms? State EE coordinators believe the limited involvement of non-science educators is due in large part to: (1) the widespread belief among non-science educators that EE is strictly a natural science and is not relevant to their classrooms, (2) state EE coordinators who are often science educators themselves (Table 2) and thus less effective at promoting EE among non-science professional networks, (3) the fact that EE is included more often in learner outcomes and curricular guidelines for science than for any other discipline.

FINDING 7

Secondary teachers are far less likely to attend EE inservice workshops than elementary teachers.

The vast majority of state EE coordinators feel it is more difficult to generate interest in EE inservice workshops among secondary teachers because they: (1) are more content-oriented than elementary teachers, (2) are pressured to prepare students for achievement tests, (3) are trained at the college level in single-subject as opposed to interdisciplinary teaching. Respondents feel that elementary teachers, on the other hand, are more experienced in hands-on learning and already engage in interdisciplinary instruction.

FINDING 8

EE inservice programs aimed at reaching under-served populations – particularly teachers of urban and inner city areas and students of color – are relatively few or are not prominent in the minds of those surveyed.

State EE coordinators do not identify teachers in inner city/urban areas or teachers of students of color when asked to identify audiences not adequately reached by EE inservice programs. Only three coordinators feel that teachers in urban, inner city, or low income areas are less likely to attend EE trainings. Only one respondent suggests teachers of African-American students are not well reached by EE inservice workshops.

VIGNETTE 2. – Kansas: EE Inservice Education for Teachers of Native American Students

Haskell Indian Junior College developed EE teacher training materials from a Native American perspective. The materials were used to design an EE inservice program for teachers of Native American students in the summer of 1993 The workshop was developed through the cooperative efforts of Haskell Indian Junior College, Kansas State and Extension Forestry, Kansas PLT, Forest Service USDA, and USEPA. Over half of the thirty participating teachers were Native Americans.

Respondents are far more likely to identify rural teachers as inadequately-reached by EE inservice opportunities. Reasons given are logistical: rural teachers are less informed about training opportunities, long travel distances limit attendance by rural teachers, and workshops are more costly to organize. Teleconferences, regional education service centers, and teams of state education agency personnel or cadres of

"master teachers" that travel across the state are a few strategies that some states employ to meet the inservice program needs of rural teachers.

The follow-up written questionnaire asked more directly whether EE inservice trainings are adapted to meet the needs of specific teacher audiences: 62% say the approach is the same for teachers in inner city and non-inner city areas; 65% say it is the same for teachers who do and do not teach students of color.

Respondents who do say their state's inservice trainings are similar, regardless of audience make-up, explain:

- "Most of the statewide initiated programs utilize the same approach in most areas, however we do conduct needs assessments before conducting staff development programs."
- "Good teaching practices are universally needed."
- "We realize we need to concentrate on these different areas, but we have not developed any type of training for our facilitators. This would be a great area for NCEET to focus on."
- "As I completed the questionnaire, the concerns forced me to think about our outreach . . . Our workshops/ inservices so far were not reaching persons of color. This was disconcerting to me as [city] is over 50% African-American."

Examples provided by those who say inservice programs vary depending on audience make-up include:

- The California Department of Education provides grants to one school district each in a rural, suburban, and urban setting. The Middle Grades EE Project encourages "research, curricula and pedagogical approaches that uniquely serve the educational needs of those student populations and their teachers."
- In Pennsylvania, "all our approaches are site specific. The Department of Education uses different teaching strategies depending on area and audience. Our primary goal is to have the inservice course transfer directly into the classroom."

Why do so few of those surveyed identify citizens of urban and inner city areas and citizens of color as not well-reached? One possibility is that these groups *are* well-reached by existing programs.[11] We think it is more likely, however, that such a perception results from lack of data on who benefits from EE inservice opportunities. Given that urban and inner city residents and people of color have not been well-reached in the past by EE, it is probable that EE inservice training does not adequately address the needs of these groups today.[12]

VIGNETTE. 3. – Utah: The EE Teacher Network

The Utah Society for Environmental Education found that information on inservice programs sent to schools was not reaching teachers. The Society decided to use the word-of-mouth approach and organized the EE Teacher Network. The Network consists of teachers who volunteer to share information on EE opportunities with their school colleagues. The Society now has personal contacts in 84 schools in Utah.

FINDING 9

Word-of-mouth is the most important means by which teachers learn about EE inservice opportunities.

Word-of-mouth rates highest as a method for informing teachers about EE inservice opportunities (Table 4). Professional environmental/outdoor education associations rate slightly higher than school district personnel and teacher professional organizations. Several respondents indicate that newsletters are effective means for professional associations to inform teachers of upcoming inservice opportunities. Computer networks, on the other hand, are the least common means of communicating with teachers about EE inservice workshops.

Table 4. – Methods by Which Teachers Learn About EE Inservice Programs as Perceived by Respondents (*N* = 43) (Scale: 1=not at all; 5 = primary)

Communication Method	Degree of Use by Teachers (Mean)	(SD)
word-of-mouth	3.6	0.7
environmental/outdoor education associations[a]	3.5	0.8
school district personnel	3.4	0.7
teacher professional/organizations	3.1	0.9
professional journals	2.6	0.9
computer network/electronic bulletin boards	2.4	0.8

[a]Several respondents indicate that EE associations and teacher professional organizations communicate effectively through newsletters.

DISCUSSION

EE teacher inservice education at the state level is loosely coordinated (Finding 1), driven more by state natural resource agencies than state education agencies (Findings 2 & 3), and dominated by nationally-developed programs such as Project Learning Tree and Project WILD (Finding 4). The fact that respondents perceive inservice providers to be more skilled in environmental content and less skilled in pedagogy (Finding 5) may in part reflect the predominance of resource agencies in EE inservice program delivery. The content of workshops delivered by these agencies is largely science-based and, as such, attracts more science than non-science teachers (Finding 6).

Despite the importance of existing efforts, natural resource agencies and national, activity-based programs cannot accomplish all goals. Lack of commitment to EE by state education agencies presents a sizable hurdle to the goal of infusing EE across disciplines and throughout the state education system. There is a clear need for inservice providers to explain the role that EE can play in furthering state education goals, standards, and education reforms. Similarly, inservice providers need to provide teachers with the institutional and follow-up support they need to incorporate EE into their classrooms and schools.

These results point to critical directions for future efforts. The following are recommendations for those who design, deliver, and fund EE teacher inservice programs. To improve the quality and scope of EE inservice programs, and ultimately EE for students K-12, efforts are needed that:

1. **Promote EE professional development for teachers.** As the demand for EE in the classroom increases, so too should the availability of staff development opportunities for teachers. EE program designers and funders should make EE staff development a priority equal to that of K-12 curriculum design.

2. **Communicate more effectively the interdisciplinary nature of EE to teachers and teacher educators.** EE inservice providers need to broaden their audience to include social science as well as natural science teachers. This involves communicating a definition of EE, particularly to secondary teachers, that encompasses the interrelationships between environmental, socio-behavioral, political, and economic systems. It also involves communicating practical ways that teachers can incorporate EE into all subject areas.

3. **Involve a greater diversity of teachers and trainers.** While inservice programs developed nationally appear to reach increasing numbers of teachers, programs that target local community issues and hard-to-reach audiences are either relatively few or are not prominent in the minds of state EE coordinators. In either case, it is vital that we begin to address the needs and interests of those who have not traditionally benefited from EE, particularly rural teachers and teachers from urban, inner city areas or communities of color.

4. **Explicitly link EE with education reform efforts and other priorities of state education agencies.** While the level of coordination and effort devoted to EE inservice education varies substantially from state to state, in general, it is not a high priority for state education agencies. In many states these agencies, confronted with limited funding and personnel, are content to let natural resource agencies pick up the "slack," particularly since conservation education has long been within the purview of natural resource agencies. However, the goal of infusing EE into school curricula would benefit from being supported, or even better, championed by state education agencies. A key vehicle for linking EE to the goals of state education agencies is through education reform.

CONCLUSION

This survey of state EE coordinators was conducted to gain information on the current practice of EE inservice education and to identify critical, future directions for inservice programs. Results also highlight additional questions:

It is vital that we examine EE inservice program needs from the perspectives of teachers and teacher educators.

Given that many states have or are drafting K-12 EE curriculum mandates, it is useful to know whether teachers seek training opportunities for themselves when encouraged or required to include EE in their classrooms.

Similarly, it is not yet known to what extent state board of education guidelines for EE curricula grades K-12 affect teacher attendance levels at EE inservice programs.

Respondents feel the needs of rural teachers are not well-served by existing inservice opportunities. Reasons provided are primarily logistical – distance

and cost. It would be helpful to know whether other factors, such as program *content*, contribute to low levels of participation by rural teachers.

Finally, it is critical to understand why EE inservice efforts that target under-represented groups are not prominent in the minds of state EE coordinators. Are the environmental and educational concerns of teachers who work in urban and inner city areas and those who teach students of color addressed by existing programs? If not, how can existing or new programs begin to address the concerns of those traditionally not well-represented in EE?

Despite the growing abundance of EE programs and curricula for students K-12, there is not yet adequate support for teachers. Survey results show that, to improve the quality and scope of EE teacher inservice programs, we need to: (1) promote EE staff development, (2) communicate more effectively the interdisciplinary nature of EE, (3) involve a greater diversity of teachers and trainers, and (4) link EE with the priorities of state education agencies through education reform.

NOTES

1 Bradley, Ann. "Basic Training" In *Education Week*. March 21, 1993.

2 "Inservice training," "staff development," and "inservice education" are used interchangeably to mean voluntary and mandatory educational opportunities for certified primary and secondary teachers. The survey did not seek information on preservice teacher education.

3 "State EE coordinator" refers to all survey respondents even though official titles vary considerably (Table 1) and, in some states, no individual is responsible for coordinating EE. Nevertheless, this term best represents the capacity in which respondents were surveyed.

4 The six state summaries not returned are not included in Appendix B.

5 Environmental Education Associates, Inc. (1992) *State-By-State Overview of Environmental Education Standards*. Environmental Education Associates, Inc. Washington, D.C.

6 Information on each state represents one individual's perspective, and respondents do not always claim to be the single most knowledgeable source of information on EE inservice programs in their states.

7 "State education agency" refers to the agency charged with administering K-12 public education in each state. Specific names of these agencies vary. There are, for example, the Indiana Department of Education, Kansas Board of Education, Texas Education Agency, and the Georgia Department of Public Instruction.

8 Three states (Delaware, Louisiana, Wisconsin) have preservice requirements for EE.

9 States in which respondents report voluntary state-wide organizations and councils are: Alaska, Arizona, Georgia, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Ohio, Utah, Vermont, Washington, Wisconsin.

10 *Draft Operating Guidelines* (October 9, 1992) Wisconsin Environmental Education Consortium.

11 The extent to which EE is directed to people of color will be examined in a national survey by Three Circles Center of Sausalito, California.

12 Fewer than twenty U.S. citizens of color attended the 1993 North American Association for Environmental Education (NAAEE) Annual Conference in Big Sky, Montana. There were over 800 conference attendees.

Appendix A

Alaska

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How is EE inservice coordinated?
There is some coordination between the State Department of Education and other agencies through the Alaska Natural Resource and Outdoor Education Association (ANROE), a professional association. This coordination is voluntary.

Who provides EE inservice?
The Alaska Department of Education has formed a partnership with the mining and energy industry to develop and disseminate geology and energy education materials (*Alaska Resources Kit: Minerals*) and promote teacher training. The Department also coordinates a geography education program, funded by National Geographic, that covers water, solid waste, and the environment. A teacher cadre sponsored by the Department in the area of Science-Technology-Society conducts leadership training around the state.

In addition, major inservice providers include the Alaska Department of Fish and Game, the Alaska Department of Environmental Conservation, Cooperative Extension Service, the U.S. Fish and Wildlife Service, the U.S. Forest Service, and the Alaska Department of Natural Resources. Their programs include Project WILD, Project Learning Tree (PLT), and Alaska Wildlife Curriculum.

The University of Alaska-Fairbanks (UAF) offers the teacher training and curriculum program, *Alaska Sea and River Week*. UAF also coordinates the Alaska Science Consortium, which enables teachers to teach science interdisciplinarily, focusing on local relevance and "a learning cycle/guided discovery approach." Alaska Pacific University has a science center that emphasizes locally-relevant science for rural, primarily Native Alaskan, communities.

The Alaska Natural Resource and Outdoor Education Association (see above) is a professional association that sometimes helps coordinate environmental education inservice programs. It offers joint facilitator training for teachers who conduct inservice programs along with agency staff.

Are credits available for EE inservice?
Short inservices are ineligible for college credit. Many of the groups mentioned above provide college credit courses for re-certification. Districts set their own standards for credit needed for promotion.

What motivates teachers to attend EE inservice?
College credit often motivates teachers to attend workshops. Cowan feels that teachers are motivated to attend inservice if environmental education workshops offer skills related to what teachers are required to know. She used student assessment as an example: because teachers are being challenged to reduce the use of standardized tests, teachers now want training in alternative methods of assessment.

What teachers are most and least likely to attend EE inservice?
Cowan thinks that the interdisciplinary nature of environmental education makes it attractive to people who provide non-science inservice, specifically to geography and to middle school integrated program inservice providers. Although there is a writing project in the state, there are no major inservice activities in the liberal arts to mesh with environmental education.

Cowan says there is more of an audience for EE inservice at the elementary level than the secondary level. Secondary teachers are harder to reach than elementary teachers because secondary teachers tend to think in terms of their own subject area rather than in an interdisciplinary way. Cowan says this is, in part, due to the pressure on secondary teachers to cover specific curricular items. Cowan also mentioned that due to lack of financial resources, the "two-teacher schools that cost $5,000 to get to" are the most difficult teachers to reach with inservice.

What are the needs of EE inservice providers?

Cowan says environmental education inservice needs to be more pedagogical, relevant, and practical. Some resource staff, for example, do not know about "outcome-based teaching" and other educational lingo, trends, or ideas pertinent to the teachers' school or district. Resource agency staff also need to learn how environmental education can serve the educational goals of school districts and state standards. Trainers need to show teachers how to infuse environmental education in their curricula rather than have it be an additional burden. Cowan also feels that educators who conduct inservice training need "plain old facilitation and organization skills."

Are there state board of education guidelines for EE inservice?

Alaska is a local-control state. The State Board of Education has no guidelines for environmental education inservice.

Is there a legislative mandate for EE inservice?

The 1993 Alaska Education Laws, (Article 5, Sec. 14.30.380), states:

"The Board shall encourage each school board to initiate and conduct a program of environmental education for kindergarten through grade 12. The program should include, but is not limited to, education regarding the need to balance resource development with environmental safeguards, the dependence of the state on resource development, and the opportunity for pollution prevention, waste reduction, and recycling. A school board may implement environmental education as part of the regular classroom studies."

Article 5, Sec. 14.03.120. Education Planning states:

"(e) A district shall, by October 31 of each year, provide to the state board, and make available to the public, a report on the performance of each public school and public school students in the district. The report must include...(7) a summary and evaluation of the environmental education curriculum described in AS 14.30.380."

Arizona

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How is EE inservice coordinated?

The Arizona Department of Education (ADE) is establishing (Spring 1994) a dissemination model for the recently completed *EE Guidelines*, that will train teachers, agency personnel, community members and others on a state-wide basis on Arizona's EE goals and concepts and how to integrate EE into the curriculum. In addition to the dissemination model, the ADE will be offering EE regional teacher training workshops that will focus on awareness, knowledge and action to help educators achieve the mandate of integrating EE into the curriculum. Both of these projects will be coordinated through the ADE with the assistance of the Interagency Committee comprised of 15 state agencies, the universities and the Arizona Association for Learning In and About the Environment (AALE), Arizona's state-wide EE organization. The projects will be advertised through the AALE newsletter, the ADE's telecommunication system and various other newsletters and events. In addition to the ADE's EE program, the Arizona Game and Fish Department offers workshops in Project WILD, Aquatic WILD and advanced natural history workshops.

Who provides EE inservice?

The ADE offers inservice opportunities to school districts who request their assistance and will be offering EE regional teacher training workshops. The Interagency Committee on EE, in which the ADE is a member, sponsors an annual EE Resource Fair for teachers and an EE Educator's Academy. Both of these events provide educators opportunities to increase their knowledge level, participate in action, review EE resources, and network with other environmental educators around the state. Several state agencies, e.g. Arizona Game and Fish, the Energy Office, and the universities provide inservice programs.

Are credits available for EE inservice?

Teachers who have not taught continuously for six or more years are required to take five continuing education units (CEU) for renewal. Fifteen hours equals one unit of credit. The Arizona Game and Fish Department work with the universities and school districts so students can receive credit hours for Project WILD and Aquatic WILD inservice. Although districts can organize inservice workshops for CEUs, credits are awarded primarily at universities. There is no endorsement or certification for EE.

What motivates teacher attendance at EE inservice?

Free resources motivate many teachers to attend inservice opportunities. Credit offered by school districts that will move teachers up on the salary schedule is also a motivator. Many teachers attend EE inservices for the information and their interest on the topic. The Arizona Game and Fish Department and the Department of Energy develop and disseminate materials to educators through workshops, conferences and special events.

What teachers are most and least likely to attend EE inservice?

Northern Arizona University offered three EE workshops in the spring of 1993 in two rural locations. They were cancelled due to a lack of interest. There could be many reasons for this lack of response, but two that should be noted are: (1) Time of year: Arizona has been developing and implementing a state-wide process assessment program for the past three years. Anything new takes time, energy and inservicing which puts extra demands on teachers. (2) Even though the EE bill was passed in June of 1990, many school districts

were not aware of their responsibilities until recently. Most of the teachers attending the EE workshops are interested in the topic, are gathering information for their school administrators, are responsible for developing a district plan for integrating EE into school curriculum, or see the environment as an interesting context through which to teach skills.

What are the needs of EE inservice providers?
Providers need a comprehensive list of EE resources that have been evaluated against an established set of criteria and a simple brochure, handbook or guide for developing, organizing and implementing workshops. Included in the handbook would be information on evaluation and assessment and ideas on how to conduct an effective workshop that utilizes good delivery techniques. It would also be helpful to include the names of individuals to contact for assistance. Although many trainers have the ideas and resources necessary to conduct an effective workshop, many need to improve their delivery techniques so that they model good teaching.

Are there state board of education guidelines for EE inservice?
There are no established guidelines for individuals to follow when providing training in EE.

Is there a legislative mandate for EE inservice?
The EE mandate states that the ADE will collaborate with the universities and other recognized EE programs in providing EE training programs for certified teachers.

California

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How is EE inservice coordinated?
Coordination of environmental education inservice is inconsistent. Some project directors meet with Andrews while others are quite independent.

Who provides EE inservice?
Inservice providers include: California State University, each of the fifty-eight county education offices, and non-profit organizations such as the Audubon Society, Sierra Club, and Environmental Volunteers. The University of California at Berkley offers a two- to three-week summer institute to be held at California State University's Humbolt campus. Project WILD and Project Learning Tree (PLT) are "two of the leading EE curricula identified in California's Curriculum and Compendium Project."

Are credits available for EE inservice?
[No information given]

What motivates teachers to attend EE inservice?
Andrews states that teachers are motivated to attend inservice by the following: scholarship, a sense that "this will really make a difference in the quality of our environment," and the desire to improve teaching skills
.

What teachers are most and least likely to attend EE inservice?
Teachers that wish to keep current on environmental issues are likely to attend. Andrews feels that teachers who have taught a long time are sometimes uncomfortable with altering their content or teaching style, and are at times reluctant to participate in environmental education inservice.

What are the needs of EE inservice providers?
Inservice providers should be aware of up-to-date pedagogy, know how to deal with multicultural/multilingual audiences, have an in-depth understanding of environmental concepts, appreciate EE's interdisciplinary approach, and "model good teaching strategies."

Andrews says that California could benefit from a simple, user-friendly database for teachers to access other kinds of national programs and materials that have a proven track record. Andrews notes that most teachers do not have access to modems, however.

Are there state board of education guidelines for EE inservice?
There are none.

Is there a legislative mandate for EE inservice?
California's Environmental Education Act of 1970, amended in 1976, "helps to support teachers who want to do EE, but is too generalized to be effective," says Andrews. It calls for public schools, colleges and universities to teach the principles of the human relationship to the environment and the wise use of natural resources.

Colorado

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How is EE inservice coordinated?
There is no significant coordinated attempt.

Who provides EE inservice?
The University of Northern Colorado is the main teacher education school while individual school districts are the main inservice providers. The Denver Museum of Natural History conducts a significant amount of inservice for the Denver area. Nature centers are not particularly involved in teacher inservice.

State agencies, such as the Colorado Division of Wildlife, the Colorado Department of Education, and Colorado State Forest Service provide inservice, as does EPA and Colorado Alliance for EE. Other agencies and organizations also participate.

Are credits available for EE inservice?
Credit arrangements are made in each district and rubber stamped by the Department of Education. College courses must be at least sixteen contact hours, so some Project WILD-type workshops cannot award continuing education credits.

What motivates teachers to attend EE inservice?
Continuing education credits are one important incentive to attend inservice programs. High personal interest in environmental education is an important incentive to many teachers. The average age of the teaching force in Colorado is young, and Hollums feels younger teachers tend to be more interested in environmental education.

What teachers are most and least likely to attend EE inservice?
Although Project WILD and Project Learning Tree (PLT) are very popular in Colorado, many teachers think environmental education is strictly science, and this limits some teacher participation in environmental education. Metropolitan areas and minorities are particularly hard to reach.

What are the needs of EE inservice providers?
Hollums feels most trainers have good teaching skills, competency, and the comfort level with teaching necessary to be good trainers. The Colorado Division of Wildlife has a very strong education component in its training that focuses on EE aspects of teacher training beyond typical Project WILD.

Are there state board of education guidelines for EE inservice?
No.

Is there a legislative mandate for EE inservice?
No.

Connecticut

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How is EE inservice coordinated?
The Office of Environmental Education (OEE) coordinates inservice training being offered within the Department of Environmental Protection (DEP). OEE staff do not work directly with the State Department of Education, but rather with individual schools and school systems. OEE receives funding and resources from other offices within DEP (i.e. Wildlife, Fisheries, Forestry).

Who provides EE inservice?
OEE coordinates Project Learning Tree (PLT), Project WILD and Aquatic WILD. OEE offers inservice training for teachers utilizing these environmental and conservation education materials, as well as field methods and techniques workshops, workshops on how to develop outdoor classrooms, and SEARCH (a program that focuses on environmental research and water quality monitoring).

Individual school districts organize inservice training and usually bring in outside professionals from the Department of Environmental Protection or other environmental organizations to assist with inservice training delivery.

The Connecticut Outdoor and Environmental Education Association, nature centers, environmental education centers and museums all provide inservice in environmental education.

Are credits available for EE inservice?
Teachers need ninety continuing education credits every five years for re-certification. Districts and other inservice providers such as the Department of Environmental Protection may, with State Department of Education approval, award credit for environmental education inservice.

What motivates teachers to attend EE inservice?
Offering continuing education credits for environmental education inservice motivates some teachers to attend, even from traditionally hard-to-reach areas such as the inner city. Others are motivated by the wish to provide more hands-on environmental experiences for their students because their own experiences have proven that students "learn more by doing". The teachers are also motivated by their students' concerns about the environment.

What teachers are most and least likely to attend EE inservice?
In Connecticut, the focus on evaluation of learning through authentic assessment is fostering a greater acceptance of interdisciplinary education, including environmental education. Because of this Joy says that teachers are looking more closely at the type of environmental education programs that OEE offers.

In general more teachers at the elementary level have attended the environmental education workshops that OEE offers. Teachers in specific disciplines, i.e. chemistry and physics are less apt to attend EE inservice.

After attending some of the more general workshops (Project WILD and PLT) teachers often look to the other programs i.e. field methods and techniques for additional information. Joy says there is a great need for environmental education inservice and Connecticut must become more effective at promoting environmental education throughout the state.

What are the needs of inservice providers?
Inservice EE providers need to be knowledgeable about what is occurring in their "own backyards." For example, many teachers and providers know more about the tropical rain forests than Connecticut forests. In Connecticut educators are paired with natural resource professionals, who are often more familiar with and knowledgeable about the local issues.

Workshop leaders need to continue to offer basic environmental education workshops and develop additional courses for more in-depth training of educators.

Colleges and universities must offer more environmental and science education classes for teachers.

Are there state board of education guidelines for EE inservice?
There are guidelines for inservice training, but not specifically for EE.

Is there a legislative mandate for EE inservice?
No, not in Connecticut.

Delaware

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How is EE inservice coordinated?
Some coordination exists between the state agencies, including the Department of Public Instruction, the Department of Natural Resources and Environmental Control, and the Department of Agriculture. The Delaware Department of Public Instruction coordinates efforts with the Delaware Teacher's Center to provide inservice.

Who provides EE inservice?
The Department of Natural Resources and Environmental Control allocates more money toward environmental education than any other state agency. It has 1.5 employees coordinating Project WILD, Delaware's most widely attended inservice; 20% of Delaware's 6,000 teachers have attended Project WILD workshops. The Department of Agriculture coordinates Project Learning Tree (PLT), but due to a limited budget, it coordinates only one or two workshops a year and allocates a small portion of one staff member's appointment to the project. Delaware State University, the University of Delaware, and the Delaware Nature Society provide inservice.

Are credits available for EE inservice?
Delaware has no re-certification requirements and thus no mandatory continuing education credits.

What motivates teachers to attends EE inservice?
Cairns believes meals and materials made available at workshops are incentives for teachers to attend inservice. However, Cairns believes the primary motivator is teacher interest in the environment.

What teachers are most and least likely to attend EE inservice?
Environmental education workshops in Delaware have not appealed to many teachers in social science fields such as language arts or history. In addition, most science teachers who are interested in environmental education are in life sciences as opposed to physics and chemistry. Secondary teachers, particularly those in the social sciences, are least likely to attend environmental education inservices. Elementary and middle school teachers attend most frequently.

Broadening the audience of teachers interested in environmental education is difficult; most teachers who attend workshops are already in other environmental organizations. Cairns feels he is "working with committed people, but I'm not sure if the circle has widened. It's the choir we're preaching to."

"Building constituencies" for environmental education inservice is difficult, in part because of the nature of existing networks. In his current position, Cairns is connected to a network of science educators rather than social science teachers. There is not an environmental education coordinator in Delaware at the state level who is trained in the social sciences.

What are the needs of inservice providers?
The limiting factor for inservice providers in Delaware is funding. The Department of Agriculture, for example, is committed to PLT but has little financial support. The Department of Public Instruction also has little

financial support. Cairns says his greatest need at the Department of Public Instruction is for a "budget to work with." He says this is more important to him than additional training materials.

Are there state board of education guidelines for EE inservice?
In 1975, the State Board of Education began requiring all secondary teachers to take at least one course in environmental education during preservice to receive their certification. Cairns says that a decision on whether elementary teachers will be required to take an environmental education to receive their initial certification will probably be made by the State Board of Education by July 1, 1993.

Is there a legislative mandate for EE inservice?
Other than the possible elementary certification requirement, Cairns believes it is unlikely that anything will be mandated for environmental education at the state level any time soon. He believes education reform efforts are focused more on early childhood education/Head Start, and assessment. He believes that recent economic downturns have caused people to be more concerned about jobs than environmental issues.

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How is EE inservice coordinated?
EE inservice is coordinated in a variety of ways, such as through information dissemination about inservice opportunities or co-sponsorship of inservice with school districts, colleges or universities, government agencies, and private organizations at state, regional, or local levels.

At the state and regional levels, inservice for public school teachers is primarily coordinated and delivered by the Department of Education's five regional environmental education service projects (RSPs). They sponsor or co-sponsor the inservice, recruit teachers, and assist teachers in receiving inservice credit.

RSPs, whether or not they serve as co-sponsors, typically publicize, through their newsletters, inservice opportunities offered by any of those entities. Each RSP has school district contact persons with whom inservice is planned and coordinated.

Who provides inservice?
State agencies that provide inservice include: the Department of Environmental Protection, the Energy Office of the Department of Community Affairs, the Game and Fresh Water Fish Commission, the Division of Forestry of the Department of Agriculture, and the five Water Management Districts.

As noted earlier, the Department of Education's Office of Environmental Education and its regional service projects also provide inservice. The Office trains inservice facilitators in the use of two Florida-specific curricula, the *4Rs* and *Biodiversity: the Florida Story*. The facilitators then coordinate with the RSPs to offer inservice workshops for teachers and pre-teachers. Businesses, private, non-profit organizations, and others also may provide inservice, often in partnership with RSPs.

Federal agencies that sometimes provide inservice are: Sea Grant, National Oceanic and Atmospheric Administration; U.S. Fish and Wildlife Service; national parks, such as Everglades National Park; and Cooperative Extension Service of the U.S. Department of Agriculture.

The Centers for Excellence in Math, Science, and Technology also provide inservice training in math, science, and computers; some of those workshops use environmental education as a vehicle.

Are credits available for EE inservice?
Credit is available for teachers to take EE inservice for both teacher certification and re-certification in other subject areas. Neither EE nor EE inservice is mandated in Florida. Therefore, EE inservice credits may be earned and applied to the subject areas of science, social studies, math, elementary education, or other subjects. EE inservice components must be approved by each school district or teacher education center (TEC) before teachers are eligible to receive inservice points. As noted earlier, the RSPs facilitate development of inservice components with districts or TECs.

At times, RSPs or agencies, in conjunction with post-secondary institutions, provide inservice programs that offer either points (credits) for certification/re-certification or college credits, or both. Whereas the school

district or TEC approves the application of EE inservice points for purposes of re-certification in a subject area, the Department of Education approves the application of college credits for that purpose.

What motivates teachers to attend EE inservice?
In Florida, as elsewhere, both teachers and students wish to know more about the environment. Dedication, hunger for knowledge, free instructional materials and other resources, and a desire for inservice points for certification/re-certification are all motivators. Additionally, EE inservice helps to prepare teachers to implement the goals of Florida's school reform initiative by teaching "across the curriculum," and using experimental learning methods.

What teachers are most and least likely to attend EE inservice?
Teachers most likely to attend inservice are those who are motivated, well-informed about inservice opportunities, eligible to earn credits (points) toward re-certification in their subject area, and have administrative support to attend. For example, to attend an inservice workshop scheduled during a workday, the school must commit to hiring a substitute teacher.

Teachers least likely to attend inservice are those who are not motivated or interested in integrating EE into their curricula, who are not informed of EE inservice opportunities, who will not earn re-certification points in their subject area, or those whose district or school has little or no funding to provide substitute teachers or pay transportation costs. To overcome those barriers, RSPs are: establishing contacts in each school for disseminating information; offering districts assistance for expanding EE inservice components so that a variety of subject areas are covered; offering workshops after hours; and reimbursing travel for teachers whose schools or districts do not cover those costs.

What do EE inservice providers need?
Inservice providers need a strong network of agencies, non-profits and businesses that are interested in EE and will assist in supporting the inservice both financially and logistically, e.g., by spreading the word, recruiting teachers, and lining up presenters. They also need experience and expertise in both EE content and teaching methods, including how EE may be integrated into different subjects. They also need to know how to evaluate their inservice programs and follow up with teachers to assure that the inservice has met teacher needs. Finally, providers must be knowledgeable about how EE supports Florida's school reform initiative, *Blueprint 2000*.

Are there board of education guidelines for EE inservice?
The Department of Education has general guidelines for inservice that apply also to EE inservice.

Is there a legislative mandate for EE inservice?
The 1989 Environmental Education Act directs the Department of Education *to provide services for teachers*, districts and institutions that wish to integrate EE into their curricula, but *does not mandate that EE be taught as part of the curricula*. Thus, the Department, particularly through the RSPs, is required to offer EE inservice assistance, but schools and school districts are not required to make use of it.

Georgia

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How is EE inservice coordinated?
No coordination exists, but there is currently an effort to address the lack of coordination. In January 1993, the state legislature passed an environmental education law that established and funded an Environmental Education Council with representatives from public education, non-profit organizations such as the Georgia Conservancy, University personnel, etc.

Who provides EE inservice?
The environmental education law (see above) charged the Department of Education with responsibility for developing a K-12 environmental education resource guide for teachers. There is currently no money to publish or disseminate the resource guide. The Environmental Education Council will recommend to the Governor that money be appropriated for publication and dissemination. The Department of Education's goal is for the guide to be distributed to at least one teacher in each school in Georgia by the fall of 1995, or earlier.

The State Forestry Service coordinates Project Learning Tree (PLT) and the State Department of Natural Resources coordinates Project WILD and Project WILD/AQUATIC. Moore believes that PLT, Project WILD and Project WILD/AQUATIC reach more teachers than any other environmental education effort in the state. The Department of Community Affairs, charged with implementing a law requiring the State of Georgia to reduce its solid waste by a certain percentage by 1994, has hired outside personnel to conduct teacher training in two curricula – *Waste in Place* (K-6) and *Waste-A Hidden Resource* – as part of an effort to meet the solid waste reduction requirement.

The Georgia Conservancy provides summer workshops taught by public school teachers or resource professionals whose fields relate to the workshop topic.

Regional Education Service Agencies (RESAs) are state-funded and school system-supported. There are approximately sixteen RESAs in Georgia. RESAs provide training requested by school systems and are therefore responsive to school systems' perceived needs. Some RESAs help coordinate Project WILD and PLT. Some have science specialists and others do not. Moore believes RESAs will soon become the "key players" in support for schools.

Local school districts receive staff development funds and have a staff development coordinator. Districts use teacher input in decisions regarding inservices. Some school districts contract professors from the University of Georgia or other universities/colleges to conduct staff development.

Are credits available for EE inservice?
Science teachers grades 9-12 can use environmental education courses for renewal. Teachers are required to earn ten credit hours every five years.

What motivates teachers to attend EE inservice?
Stipends are sometimes available for teachers to attend voluntary workshops. Teachers do not receive stipends for inservice trainings required by the district because the training is considered part of one's assigned duties.

What teachers are most and least likely to attend EE inservice?
Moore feels teachers of the lower grade levels are more receptive to environmental education workshops. Middle and high school teachers are less interested. Moore says that neither the level of communication nor the sense of teamwork is as well developed among secondary teachers as it is among elementary teachers. He also states that grade 9-12 teachers are at times more territorial, more subject-specific, have poorer "horizontal communication," and tend to want a "mini-college atmosphere" at their schools.

What are the needs of EE inservice providers?
Moore sees a need to break down walls between language, math, and sciences and for teachers to "view education as a whole and not a part." He feels this change in attitude may help interest secondary teachers in environmental education and other non-subject-specific training opportunities.

Are there state board of education guidelines for inservice?
The Quality Basic Education Act was passed by the State of Georgia to establish a uniform core curriculum across the state. In response to this Act, the State Board of Education developed and adopted, in 1986, the Quality Core Curriculum. Contained in the Core Curriculum are K-6 general environmental education objectives; environmental objectives for grade 7 life science, grade 8 earth science; and fifteen course available for schools to incorporate into existing curricula in grades 9-12 .

Is there a legislative mandate for EE inservice?
In January 1993 the state legislature passed an environmental education law that established and funded the Environmental Education Council with representatives from public education, non-profit organizations such as the Georgia Conservancy, University personnel, etc.

Hawaii

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How is EE inservice coordinated?
Staff development activities are coordinated at the school, district, and state level. State level provides overall directions and assist districts and schools by training a cadre of master teachers in environmental education.

Who provides EE inservice?
In addition to the Department of Education, non-profit organizations, businesses, industries, other state agencies, and community groups provide workshops for teachers. Many of these workshops are provided independently, while others are coordinated through the Department of Education. Partnerships and collaborative presentations are also conducted and highly encouraged. Current emphasis at the elementary level has been the *Ohia Project*, a K-8 environmental education program that was developed by the Bishop Museum and Moanalua Gardens Foundation in cooperation with the Department of Education. *Investigating and Evaluating Environmental Issues and Actions*, a process module developed by Dr. Harold Hungerford and Dr. Trudi Volk at Southern Illinois University, is being emphasized at the secondary level.

Are credits available for EE inservice?
Credits can be made available for EE inservice from the University of Hawaii or the Department of Education. Department of Education credits are available for re-classification/pay increase purpose only.

What motivates teachers to attend EE inservice?
Many different factors motivate teachers. Some teachers are motivated by credits, others by the offer of free materials. Some teachers are also motivated by personal interest or the direction/priority set by the school.

What teachers are most and least likely to attend EE inservice?
A recent survey revealed that elementary teachers were most interested in environmental education. At the secondary level, science and social studies teachers were most interested in the environment. There were no particular differences in interest between rural, suburban, or urban audiences.

What are the needs of EE inservice providers?
EE inservice providers need to know pedagogy, the philosophy of the Department and schools, the directions and priorities of the schools, and current teaching and learning theories and strategies. To ensure effective staff development activities, outside resources are usually teamed with Department's staff.

Are there state board of education guidelines for EE inservice?
There are no guidelines for EE inservice at this time. However, the Board of Education adopted a Foundation Program Objective that focused on environmental education: *Develop a concern for preserving and conserving the environment.*

Is there a legislative mandate for EE inservice?
There is no legislative mandate for EE inservice at the present time. However, the State Representatives held an Energy and Environmental Summit and are currently drafting a legislative action for environmental education.

Idaho

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How is EE inservice coordinated?

The Department of Education provides some coordination. The Department administers Eisenhower funds for workshops at college and directly funds instructors for some workshops, including *Geology, Natural History, and Writing Across the Content Areas*, a six-day trip down the Salmon River.

Who provides EE inservice?

The following agencies, universities, and organizations all provide environmental education inservice:

- Department of Education
- Boise State University
- Idaho Power
- Northwest Power Planning Commission
- U.S. Department of Energy
- University of Idaho
- Idaho State University
- Bonneville Power Administration
- Idaho Forest Products Commission
- Sawtooth Science Institute

There is extensive use of Project WILD and PLT in Idaho.

Are credits available for EE inservice?

Teachers are required to obtain continuing education units (CEUs) in specific content areas. CEUs can be from college credit or workshops. Fifteen hours of workshop attendance equals one college credit. Teachers need six college credits every five years to renew any teaching certificate.

What motivates teachers to attend EE inservice?

Scholarship programs that enable teachers to attend workshops are sponsored by the Idaho Science Teachers Association, the Idaho Society for Energy and Environmental Education, forest products associations, and soil conservation districts.

The Department of Education strives to make workshops enjoyable. According to Kay, "we try to get people out of the cities and into the mountains or on the river." Family members are occasionally encouraged to attend as well.

What teachers are most and least likely to attend EE inservice?

Secondary teachers are difficult to reach because "they don't think they need it [additional training]." However, Kay believes there is great potential for expanding participation in environmental education workshops.

Participants include teachers as well as people from state and federal resource agencies, state parks, the United States Forest Service, the Bureau of Land Management, 4-H clubs, and Girl Scouts and Boy Scouts.

Publicity is done through mailings, newsletters, and college bulletins, but "word of mouth is actually the best advertising we have."

What are the needs of EE inservice providers?
"Ours [EE facilitators] are well-trained. We require that they go through the course they'll be teaching." Facilitators are required to do internships, up to two years in length, in the workshop they will facilitate. Kay feels teachers need to be exposed to "different ideas in content and pedagogy." There are also special workshops to help facilitators improve their teaching skills.

Are there state board of education guidelines for EE inservice?
[no information given]

Is there a legislative mandate for EE inservice?
[no information given]

Illinois

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How is EE inservice coordinated?
The State Conservation Education Advisory Board (CEAB) has representatives from the EPA, Department of Agriculture, the Department of Natural Resources, the Department of Conservation, and the Illinois State Board of Education (ISBE). Efforts for inservice coordination for environmental education are made by the CEAB, but not mandated. Coordination of such inservicing will be more closely addressed by the Center for Scientific Literacy of ISBE in the near future.

Who provides EE inservice?
At this time, ISBE funds many environmental projects through the Center for Scientific Literacy. These projects were proposed on a competitive grant basis. Individual schools, districts, regional educational service centers and private service providers include EE in many programs. The Environmental Education Association of Illinois, notably, has received grants for the past four years to fund Project WILD, PLT, Aquatic WILD, CLASS, Groundwater and Recycling training for teachers throughout the state.

The state agencies for Agriculture, Conservation, Energy and Natural Resources and EPA all have education consultants/coordinators who provide services and materials to teachers throughout the state. Chicago Academy of Sciences, Lincoln Park Zoo, Shedd Aquarium, etc. have made dedicated efforts for dissemination of EE materials. Some, but not all, college preservice components include training on PLT, WILD, etc.

Educational Service Centers typically provide EE inservice training in conjunction with local university/college assistance. Many of the grant programs offer graduate credit for successful completion of project requirements.

Are credits available for EE inservice?
Teachers must renew annually, but there are no additional state-level requirements for continuing education or staff development credits. Local districts have a substantial amount of control and may require teachers to obtain advance training in subject-specific areas.

What motivates teachers to attend EE inservice?
Scientific Literacy grants have been able to allow inservice providers to pay stipends, etc., for teachers. In some cases, graduate credit costs are absorbed by the grant; in others, the credit is made available. Eisenhower funds have also been used for staff development in EE, whether at the local school level or higher.

What teachers are most and least likely to attend EE inservice?
Pollock believes more elementary teachers respond more to environmental education workshops because of the ease of integration from their science requirements into reading and mathematics and social studies units. Secondary teachers seem to have more traditional disciplinary demands on their district's curricular requirements. Probably more middle school teachers integrate EE into both science and social studies. Probably more high school teachers have undergraduate/graduate training in environmental-specific courses.

What are the needs of EE inservice providers?
[no information given]

Are there state board of education guidelines for EE inservice?
[no information given]

Is there a legislative mandate for EE inservice?
There is no mandate for EE inservice.

Indiana

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How is EE inservice coordinated?
The Indiana Conservation Education (ICE) Working Group is an informal group with representatives from the Sierra Club, utility companies, higher education, and state agencies. The purpose of this group is to build an alliance among those interested in environmental education in Indiana. All state agencies agreed to work and plan with ICE.

Who provides EE inservice?
The Department of Natural Resources coordinates Project Learning Tree (PLT) and Project WILD. Wright approximates that 20,000 teachers have been trained in PLT and Project WILD. The Office of School Assistance within the Department of Education is a field service office and, as such, personnel have a high level of contact with teachers in the field. Wright works in this office and works through the Hoosier Association of Science Teachers, Inc. (HASTI), the Environmental Education Association of Indiana (EEAI), and the nine Educational Service Centers around the state to launch new inservice programs. The Educational Service Centers, funded by the state and by school districts, provide resource materials and coordinate staff development workshops for teachers.

Indiana University facilitates PLT and Project WILD workshops and conducts science workshops with an environmental focus. Indiana State University offers a program in Outdoor Education and has a Science Teaching Center. Purdue University provides workshops for teachers. Ball State University has a School of Natural Resources and provides preservice training to teachers.

Is credit available for EE inservice?
Teachers may use environmental education workshops such as PLT and Project WILD for science credit toward updating their certificates.

What motivates teachers to attend EE inservice?
Receiving materials is one incentive to attend workshops. In addition, Wright believes that demonstrating the use of curricular materials in workshops encourages teachers to incorporate the materials into their own classrooms.

What teachers are most and least likely to attend EE inservice?
Wright says more elementary than secondary teachers participate in the Department of Education's workshops, in part because "interdisciplinary thematic" is currently popular at the elementary level. This interdisciplinary-style of instruction is not as common with middle school and high school teachers.
Education service centers conduct teacher evaluations of each workshop. According to Wright, Project WILD, PLT, and the environmental education workshops coordinated by the Department of Education are all extremely well-received.

What are the needs of EE inservice providers?
[no information given]

Are there state board of education guidelines for EE inservice?

Approximately seven years ago, an "innovative superintendent" brought in "the best of Indiana's teachers" to develop the *A Plus Program*. This program has overriding goals and proficiency indicators for all disciplines. Although there are no goals directly related to environmental education, many of the science proficiencies are related to environmental education. The Department of Education's environmental education materials all demonstrate how use of the environmental education programs advance the Board of Education's goals and proficiencies.

Is there a legislative mandate for EE inservice?

There is no legislative mandate for environmental education. However, a task group, chaired by Sam Carman of the Department of Natural Resources, and funded by a grant from the United States Forest Service, is developing a state plan for environmental education to introduce to the legislature. This planning effort is coordinated through the ICE working group.

Iowa

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How is EE inservice coordinated?
There is considerable coordination between the Iowa Conservation Education Council (ICEC) and other groups. Some individual efforts are carried out by the Department of Education and the Department of Natural Resources.

Who provides EE inservice?
Employees of the Department of Education travel around the state to conduct annual teacher inservice programs, including Project WILD, and Iowa Clean SWEEP (Solid Waste Environmental Education Program). A workshop series for Project Learning Tree (PLT) and Nature Scope is planned for 1993-94. The Department of Natural Resources also conducts teacher preservice programs on Project WILD and other aquatic programs.

Area Education Agencies (AEAs), funded by the state but separate from the Department of Education, usually assist with program delivery and occasionally initiate their own workshops. AEAs develop courses, usually offered at the AEA office, to teachers for credit toward re-certification. AEAs must first receive state approval for courses. In addition, the Iowa Conservation Education Council (ICEC) offers multiple joint workshops including *Winter Solstice*, *Biodiversity Conference*, *Learning Styles* and *Nature Speaks* to several hundred educators annually.

The University of Northern Iowa offers *Environmental Issues Instruction* for up to one hundred teachers and *Environmental Potpourri* for up to fifty teachers. Drake University also conducts teacher inservice programs.

Are credits available for EE inservice?
Teachers need eight semester hours every five years to renew certification. However, if they can verify two years of teaching within that five-year span, they only need two semester hours. Environmental education inservices available for continuing education units (CEUs) are provided mainly by Drake University, the University of Northern Iowa, and the Area Education Agencies. Teachers may also receive college credit from AEAs, provided the AEA has a relationship with a university or community college. The AEAs are an important source of CEUs for rural Iowa teachers.

What motivates teachers to attend EE inservice?
Toomsen said that workshop topics are important in determining whether or not teachers attend. Workshops about learning styles and student-centered programs, or workshops on themes such as biodiversity, rainforests, and Native Americans interest a number of teachers. In addition, convenience, such as avoiding overnights and avoiding long travel distances, is important to teachers, particularly those with young families.

What teachers are most and least likely to attend EE inservice?
Many environmental education workshop participants are non-science teachers.

What are the needs of EE inservice providers?
Providers need facilitator training and a means of keeping current on topics and issues.

Are there state board of education guidelines for EE inservice?
The Iowa State Board of Education has issued some guidelines, but Toomsen believes these have "probably only had a limited affect."

Is there a legislative mandate for EE inservice?
In process.

Kansas

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How is EE inservice coordinated?
There is very little coordination between the Department of Education and other organizations providing environmental education programs. KACEE provides some, but it a very informal organization. KACEE has no staff and a very small budget. Strickler describes KACEE as "an organization of organizations." It meets twice a year and has approximately 100 organizational members plus a number of individual members. In 1978, the Kansas Legislature passed an Environmental Education Resolution which urged recognition of KACEE as the official advisory body to the Department of Education. KACEE, however, is "not there solely for serving the State Board of Education." KACEE has a broad-based membership that includes federal, state, local school districts, business and industry, non-profit groups like the Audubon Society. KACEE is interested in informal environmental education as well as K-12. Strickler would like to see better coordination with the State Board of Education. He believes that the State Board of Education could help garner school administrator support for environmental education.

Who provides EE inservice?
Universities and colleges, including Kansas University, Kansas State University, Witchita State, Emporium, Fort Hayes, and Pittsburgh State, provide environmental education inservice. PLT and Project WILD are also available.

KACEE offers a 3.5-day workshop that provides teachers, youth leaders, natural resource professionals and academics with training in *Investigating Your Environment* – curricular materials developed by the USDA Forest Service which emphasize educational process. KACEE has sponsored 20 such workshops since the organization began in 1969.

Are credits available for EE inservice?
Inservice credit is approved by individual school districts. Teachers can receive re-certification credit and graduate credit for attending the KACEE workshop. PLT and Project WILD are also available for inservice credit.

What motivates teachers to attend EE inservice?
Strickler believes that administrative support is important in encouraging teachers to attend workshops. School districts can help teachers attending inservices by providing release time. The elementary science coordinator in the Topeka School District, for example, personally encourages teachers to attend workshops.

The Department of Wildlife and Parks has Outdoor Wildlife Learning Sites (OWLS). It provides matching funds to school districts to develop their own sites and to encourage teachers to attend trainings such as PLT, KACEE and WILD.

What teachers are most and least likely to attend EE inservice?
Strickler has not noticed a pattern in teachers who do or do not attend inservices.

What are the needs of EE inservice providers?
Strickler believes there is a need for more workshops that emphasize process, so that teachers can then incorporate PLT, WILD, WET materials more effectively into their classrooms.

Are there state board of education guidelines for EE inservice?
In 1978, the State Board of Education adopted an Environmental Education Resolution which recognized KACEE as the official advisory body to the State Board of Education.

Is there a legislative mandate for EE inservice?
No. Strickler does not think a mandate would succeed in Kansas. He describes Kansas as "a populist state" and "anti-government." While he once testified in favor of a state mandate for environmental education, Strickler would now not support a mandate.

Kentucky

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How is EE inservice coordinated?

The Kentucky Association for Environmental Education (KAEE), a voluntary organization, works to bring individuals together and build cooperation.

The Tennessee Valley Authority (TVA) has a network of environmental education centers located in the TVA watershed; two of the centers are in Kentucky. TVA provided seed money and contributes some annual funding to establish and maintain the network. Directors of the EE centers meet each year. Wilson describes the network as a cooperative effort.

Who provides EE inservice?

EE inservice workshops are offered by most universities in Kentucky. There are university-based environmental education centers at Western Kentucky University and Murray State University, and a new one at the University of Louisville's Institute for Environment and Sustainable Development.

State agencies that provide environmental education inservice workshops include the Department of Fish and Wildlife Resources, which coordinates Project WILD, and the Department of Parks, which has recently trained all naturalists in the State Park System to conduct Project WILD workshops. Northern Kentucky University is responsible for Project Learning Tree (PLT).

The Department of Education had an environmental education consultant from 1972 until two years ago, when the position was abolished. Responsibilities for EE have been assumed by Tricia Kerr, Science Consultant with the Department of Education. The Department is currently managing the program, *Activity Centered Elementary Science* (ACES), which promotes hands-on science education and includes some environmental education activities.

The non-formal sector, including nature centers, museums, environmental education centers, and the Louisville Zoo, is an active provider of EE inservice workshops.

Are credits available for EE inservice?

Once teachers receive their certification, they are required to earn their masters within ten years or lose certification. Some universities offer EE courses that teachers may take when earning the master's degree. Murray University does not offer a masters degree in EE, but teachers may choose EE as an emphasis. In addition, each year teachers are required to spend five days of inservice training devoted to topics designated by the state and five days devoted to topics chosen by the teacher and individual school districts. Environmental education is frequently offered in both categories.

What motivates teachers to attend EE inservice?

Teachers are motivated by interest in EE, inservice credit, and the relevance of EE to meeting the goals of KERA (Kentucky Education Reform Act).

What teachers are most and least likely to attend EE inservice?
Teachers most likely to attend are those looking for rich sources of activities and those needing to satisfy inservice requirements.

What are the needs of EE inservice providers?
Providers need coordination of efforts into a united, state-wide program.

Are there state board of education guidelines for EE inservice?
No.

Is there a legislative mandate for EE inservice?
There have been two legislative mandates that affect environmental education in Kentucky:

1. In August 1989, the Kentucky Environmental Quality Commission (EQC) was presented with a report from KAEE which reviewed the status of environmental education in the Commonwealth. To review the KAEE report findings and recommendations, the EQC created a Task Force on Environmental Literacy. This task force, comprised of individuals from education, higher education, state agencies, corporate communities, media and other community and environmental organizations, presented its recommendations to the EQC in October 1989. The most prominent recommendation was to legislatively create an Environmental Education Council to provide state-wide leadership and planning for EE.

   Legislation, known as the Kentucky Environmental Literacy Act or as the Environmental Education Act, was introduced and passed in February 1990 creating the Environmental Council to "provide leadership and planning for environmental education for the population of Kentucky . . ." *The Council's responsibilities include program development, preservice, inservice, and research.* The Act also calls for all universities in Kentucky to establish EE centers that offer EE inservice and preservice training. It was March 1991, however, before the Governor appointed the council members. In April 1992, the legislature met in special session to deal with the state's budgetary emergency. The budget for the council was eliminated, and it is now defunct.

   Since March 1993, a renewed effort is underway to reactivate the council. This effort includes securing funds for a full-time director, EE specialist, and support staff. It also includes encouraging existing council members to resign, so the current Governor can appoint new members and develop an interest in seeing the council funded.

2. The Kentucky Education Reform Act (KERA) of 1991 mandates vast education reform at the school building level to be implemented over the next five to six years. To implement site-based decision-making, school-level policy will no longer be the responsibility of principals and school boards. Instead, school policies will be set by newly established school councils – composed of three teachers, two parents, and one administrator. The goals of KERA call for an increased effort by teachers to provide educational experiences that stress cooperative learning, problem solving, critical thinking, and an integrated approach to the curriculum.

Wilson says that environmental education has an "uncommon opportunity" to work with the education reform movement in Kentucky in redesigning the state's education systems. One strategy for linking environmental education with education reform will be to develop inservice offerings that honor the goals of the reform mandate.

Louisiana

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How is EE inservice coordinated?
The National Science Foundation Strategic Science Initiative employee with the Department of Education coordinates science inservice. There is no overall coordination of environmental education inservice training, although Long is beginning to coordinate an effort.

Who provides EE inservice?
The Department of Education, the Department of Wildlife and Fish, and the Louisiana State University Consortium provide inservice training. School districts provide inservice training with the help of Eisenhower funds. Inservice workshops available in Louisiana include Project WILD, Project Learning Tree (PLT), and Project WET.

Are credits available for EE inservice?
Continuing education units are awarded district-by-district.

What motivates teachers to attend EE inservice?
According to Long, grants and scholarships are key ways to motivate teachers to attend workshops.

What teachers are most and least likely to attend EE inservice?
[no information given]

What are the needs of EE inservice providers?
Long feels trainers need better knowledge of available materials and programs.

Are there state board of education guidelines for EE inservice?
No. There is an effort currently underway to upgrade requirements for preservice, and a committee is developing a plan for including environmental education in the new requirements. Long says Louisiana is "one of few states with a preservice initiative."

The State Department of Education is preparing to write a science framework, as part of the National Science Foundation Strategic Science Initiative. In 1996, other frameworks will be complete and environmental education will be connected throughout the curriculum. Long says that, as part of the current curriculum design efforts, teacher training is also undergoing " complete scrutiny in Louisiana."

Is there a legislative mandate for EE inservice?
Yes. The legislature passed legislation in 1993, setting up the Louisiana Environmental Education Committee to establish guidelines and timetables for a balanced EE program for the state.

Maine

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How is EE inservice coordinated?
Earth Minders is an umbrella group that coordinates environmental education efforts around the state. Members include the State Department of Environmental Protection, State Air Quality Bureau, Maine Environmental Education Association, Maine Energy Education Program (of the State Department of Economic and Community Development), and Maine Audubon, as well as other members of the environmental education community. This is done over interactive television.

Who provides EE inservice?
The Maine Department of Conservation coordinates Project Learning Tree (PLT) and the Maine Department of Inland Fisheries and Wildlife coordinates Project WILD. Unity College and College of the Atlantic both offer inservice in environmental education, as does the University of Maine system. Non-profit groups providing inservice include the Chewonki Foundation, Maine Environmental Education Association, Maine Audubon, and Earth Minders.

Are credits available for EE inservice?
Teachers are required to earn six credits every five years for re-certification. Teachers determine how they would like to earn their six credits and then receive approval from a Peer Support Team of other teachers.

What motivates teachers to attend EE inservice?
Keller does not feel that course credit is a critical motivator for attending inservice, rather "professional updating to keep in step with reform movements" is a prime motivation. Perks, such as free meals as a part of the workshop, encourage teachers to attend.

What teachers are most and least likely to attend EE inservice?
Secondary teachers traditionally have been less involved than elementary teachers in environmental education inservice. Keller sees environmental education as a perfect vehicle for integrating the study of the sciences, which is a goal of science reform today. Keller has little interaction with non-science teachers, however, and says he is less aware of how attractive environmental education is to teachers in fields other than the sciences.

What are the needs of EE inservice providers?
Keller feels environmental education is closely aligned with "science" in the minds of many educators. The challenge to trainers is to give teachers imagery for how environmental issues fit into non-science subject areas. In this regard, it is important to "make things explicit" by providing examples of what is meant by 'infusion,' 'integration,' and 'interdisciplinary' with respect to environmental education.

Are there board of education guidelines for EE inservice?
Not for EE inservice. A document called the Common Core of Learning, adopted three years ago, expresses a philosophy of K-12 education that emphasizes four content areas: problem solving, personal and global stewardship, the human record, and communication. Environmental education is an implicit part of these content areas, particularly personal and global stewardship. School districts and teachers are encouraged, but not required, to incorporate the Common Core of Learning into their classrooms. Keller estimates that ap-

proximately one third of schools have "taken the Core to heart."

Is there a legislative mandate for EE inservice?
There is no mandate.

Maryland

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How is EE inservice coordinated?
There is a state-wide council that provides minimal coordination of environmental education training for the twenty-four school systems in Maryland. Communication between agencies and assistance of state EE specialists provide more coordination.

Who provides EE inservice?
Responsibilities for providing inservice are evenly split between schools, school systems, state agencies, government groups, non-profit organizations, and higher education entities. Many provide some preservice training opportunities.

Are credits available for EE inservice?
Graduate credits are available from higher education entities but are often expensive. Department of Education credits are less expensive and widely used as an incentive.

What motivates teachers to attend EE inservice?
Perceived quality of training, applicability to teacher's personal situations, availability of funds to cover expenses (stipends, substitutes, transportation), and availability of funds to implement training are keys to teacher attendance.

What teachers are most and least likely to attend EE inservice?
Teachers with a sense of commitment to education or the environment, "professional" teachers, and new and young teachers are most likely to attend a training program and then *implement* that training. Older, burned out teachers are not likely to attend and less likely to implement training.

What are the needs of EE inservice providers?
[no information given]

Are there state board of education guidelines for EE inservice?
Minimal guidelines exist for state credit. No specific guidelines exist for EE, but funding sources regularly apply defacto guidelines prior to delivering funds. This is probably more effective than simple guidelines.

Are there legislative mandates for EE inservice?
Legislative mandates exist at three levels: (1) An environmental education bylaw, passed by State Board of Education, established minimum responsibilities of local school systems in 1989. (2) Most bylaw goals are integrated into science and social studies outcomes that form the basis for state mandated performance assessment. (3) Some legislative funding mandates EE.

Massachusetts

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How is EE inservice coordinated?
An advisory group to the Secretary of Environmental Affairs on environmental education provides some measure of coordination.

Who provides EE inservice?
The Department of Education funds inservice through the Eisenhower program. Also, the Department of Education's Commonwealth Institute distributes six hundred thousand dollars in grants of less than three thousand dollars each for inservices, including, but not limited to, environmental education inservice. The Division of Fish and Wildlife coordinates Project WILD inservice and the Department of Environmental Affairs publishes a directory of resources and training opportunities for environmental education.

Are credits available for EE inservice?
There is no state-wide continuing certification requirement.

What motivates teachers to attend EE inservice?
Some districts offer pay incentives for attendance. Other incentives include providing materials at workshops that are ready-to-use in the classroom. Many teachers participate out of personal interest.

What teachers are most and least likely to attend EE inservice?
[no information given]

What are the needs of EE inservice providers?
Thomson feels it is important that trainers be credible as teachers.

Are there state board of education guidelines for EE inservice?
There are no guidelines

Is there a legislative mandate for EE inservice?
There is no legislative mandate. However, the new Education Reform Law does state that the Board of Education may include a fundamental knowledge of environmental protection in its academic standards.

Minnesota

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How is EE inservice coordinated?
The Formal EE Coordinator for the Minnesota EE Advisory Board coordinates teacher inservice.

Who provides EE inservice?
The Department of Natural Resources coordinates Project Learning Tree (PLT) and Project WILD workshops. The Department of Education is producing a model curriculum for environmental education, but there is limited funding for distribution. There are many providers, including the Environmental Learning Centers, Zoo, Science Museum, School Nature Area Project, as well as the DNR.

Are credits available for EE inservice?
Yes. Teachers need 120 credits every five years to maintain certification. As many as ninety credits can be obtained from university courses. Approval is at the district level. Credits are awarded for college classes, workshops, independent study, and travel.

What motivates teachers to attend EE inservice?
Interest in the content and provision of continuing education and graduate credit.

What teachers are most and least likely to attend EE inservice?
There is more interest in inservice workshops among elementary teachers than secondary teachers, and more among science and social studies teachers than other disciplines. Not many currently available inservices target disciplines that have not traditionally involved environmental education.

The median number of years teaching experience in Minnesota is eighteen and, in general, older teachers appear less interested in "new stuff" such as environmental education inservice (although Landers says there is no real data on this). Teachers in large metro districts are less likely to come to workshops – they have their own curriculum coordinators as gatekeepers. Hard-to-reach populations include teachers in the inner city and in rural and outlying areas, particularly those in the southwest and northwest regions of the state.

What are the needs of EE inservice providers?
The needs EE inservice providers are as follows: (1) support from administration, school boards, and the Department of Education; (2) agreement on basic EE concepts; (3) an entrenched system that provides long-term support (Landers notes this is happening); (4) better communication and coordination among providers; innovative delivery methods; (5) more funding.

Are there state board of education guidelines for EE inservice?
There will be, shortly, with the adoption of the graduation outcomes and concept frameworks which include EE.

Is there a legislative mandate for EE inservice?
The 1985 State Board of Education rule mandated that EE be integrated K-6. The 1990 Environmental Education Act only required the Department of Education to encourage schools to provide EE K-12. The new graduation outcomes, when adopted by the legislature, will in effect, require EE. This will drive the provision of both preservice and inservice.

Other issues?
Results of a state-wide survey suggest that seventy percent of all teachers in the state provide students with some form of environmental education in their classroom. Of these, however, only thirty percent feel adequately prepared. Sixty percent of teachers with some preservice training in environmental education felt adequately prepared to provide environmental education in the classroom, while only thirty percent of all teachers with inservice training felt prepared.

Landers also reports: (1) We need more understanding among teachers of the basic concepts of EE, integration methods, results-based education, and good assessment. (2) We need to match community resources (funding, out-of-classroom experiences, service project potentials) with school curricula. (2) We need a clearinghouse/ resource center that not only provides resource but implements a monitoring-evaluation-feedback system.

Mississippi

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How is EE inservice coordinated?
Staff development plans are designed by each school district's staff development committee and then submitted to the Department of Education for approval. Teacher inservice occurs within the duration of teacher's contract.

Who provides EE inservice?
Inservice providers include the State Department of Education, Mississippi State University Extension Service, other state universities, and private companies.

Are credits available for EE inservice?
Staff development credit is awarded through the local school district.

What motivates teachers to attend EE inservice?
Well planned staff development, strong presentations, and advance notice encourages teacher attendance. Teachers are interested in up-to-date information, integration of subjects and the best for their students. When staff development is meaningful, teachers will attend.

What teachers are most and least likely to attend EE inservice?
[no information given]

What are the needs of EE inservice providers?
Providers are generally well-equipped. *A-Way With Waste* trainers attend *People Against Litter* (PAL) workshops so that training around the state may be integrated. More trainers and time for teacher training would be helpful.

Are there state board of education guidelines for EE inservice?
An Environmental Education Strand has been integrated into the K-12 *Social Studies Curriculum*. The *A-Way With Waste Curriculum* is in each school district. The *Science Curriculum* will begin revision procedures in February 1994, under the leadership of Brian Knippers, Science Specialist. EE inservice will be integrated into the science and vocational/academic technology.

Is there a legislative mandate for EE inservice?
The Mississippi Legislature has mandated a waste minimization curriculum be provided by the State Department of Education. The curriculum, *A-Way With Waste*, is a K-12 curriculum in which teacher training is offered to local districts.

Missouri

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How is EE inservice coordinated?
Coordination is informal. Vamon tries to "stay in touch with others doing environmental education inservice at state-level science meetings."

Who provides EE inservice?
Although the Department of Education provides some environmental education inservice, the majority is provided by the Missouri Department of Natural Resources which also conducts various summer workshops. The Missouri Department of Conservation coordinates PLT.

Are credits available for EE inservice?
[no information given]

What motivates teachers to attend EE inservice?
The Missouri Department of Natural Resources and the Department of Conservation give out free educational materials at workshops that teachers can take back to their classrooms.

What teachers are most and least likely to attend EE inservice?
Environmental education inservice is most popular among K-6 teachers. Rural, small-school teachers have a hard time finding out about interesting workshop opportunities. In addition, Vamon notes that many teachers in smaller schools have summer jobs that conflict with summer workshop opportunities.

What are the needs of EE inservice providers?
[no information given]

Are there state board of education guidelines for EE inservice?
There are no guidelines.

Is there a legislative mandate for EE inservice?
No.

Nebraska

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How is EE inservice coordinated?
No single agency has direct responsibility for coordinating environmental education inservice training, though Woodland is on several commissions. Agencies "are independent, but they talk to each other." Recent attempts to create an environmental education consultant position in the Department of Education have not yet been successful; some of the recently legislated lottery money may be earmarked for environmental education.

Who provides EE inservice?
The Nebraska Game and Parks Commission coordinates Project WILD. The Nebraska Natural Resources Commission and each of the twenty Natural Resources Districts conduct inservice. The Nebraska Environmental Education Association also conducts inservice.

Are credits available for EE inservice?
Decisions about which courses are eligible for continuing education units are made by school districts on a case-by-case basis. The state does not mandate the content of continuing education units. Factors that districts consider include how the course is organized and whether it is affiliated with a university. Most districts require six hours of college credit every five years for re-certification.

What motivates teachers to attend EE inservice?
A few strategies Woodland recommends to encourage teachers to attend workshops include: emphasizing to teachers the benefits of the workshop, awarding stipends or scholarships from Eisenhower funds, and conducting workshops during "contract time." "They [teachers] definitely want hands-on, involving activities they can use in the classroom. They don't just want to be talked to." He also suggests word-of-mouth advertising through teachers who have participated in the workshops. There are also opportunities to advertise at professional meetings. For example, Project WILD made a presentation to the State Science Teachers Association.

What teachers are most and least likely to attend EE inservice?
Woodland believes social science and English teachers are fairly receptive to environmental education workshops, but lack of funding limits their participation. If a science or math teacher is interested in taking a workshop, there are "funds and opportunities galore," but this is not the case with teachers in the social sciences.

What are the needs of EE inservice providers?
Woodland says that trainers "need to understand where the teachers are coming from—their classroom background." Trainers would benefit from understanding the demands placed on teachers to cover so much material.

Trainers might show teachers how to integrate environmental education into existing curriculum and how to apply instructional concepts to actual teaching situations, such as how to encourage higher-order thinking in students rather than rote memorization. Woodland says the message of science reform is that "less is more. What you learn should be connected to your everyday life."

Are there state board of education guidelines for EE inservice?
[no information given]

Is there a legislative mandate for EE inservice?
Nebraska is a local-control state. There is no state environmental education mandate.

Nevada

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How is EE inservice coordinated?
There is no state environmental education coordinator and no coordinating body.

Who provides EE inservice?
The Nevada Energy and Educational Network (NEE-NET), an umbrella group organized by the University of Nevada at Reno and Las Vegas, provides teacher inservices.

Are credits available for EE inservice?
Teachers are required to obtain six hours of inservice credit every four years. Sixteen clock hours of training equals one in service credit. NEE-NET coordinates inservice credit.

What motivates teachers to attend EE inservice?
Nevada is a large state. Walton-Buchanan believes that, although many teachers probably are not motivated to travel long distances for an inservice workshop, they might attend if college credit is available. Walton-Buchanan believes that many teachers who sympathize with ranchers and miners might not attend a workshop with the word "environmental" in its title.

What teachers are most and least likely to attend EE inservice?
NEE-NET primarily targets elementary teachers, but it occasionally provides inservice opportunities for middle and high school teachers as well.

What are the needs of EE inservice providers?
[no information given]

Are there state board of education guidelines for EE inservice?
No.

Is there a legislative mandate for EE inservice?
No.

New Hampshire

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How is EE inservice coordinated?
Environmental education in New Hampshire is informally coordinated through networking opportunities at meetings and during routine communication with each of the groups listed below.

The New Hampshire Fish and Game Department publishes *The New Hampshire Environmental Educators Resource Book*, a directory of environmental education resources and contacts in the state.

Who provides EE inservice?
Plymouth State University offers a Master's degree program in Environmental Education and Antioch College offers a Master's degree in Environmental Policy. Both are involved in providing environmental education inservice.

Non-profit organizations such as the Audubon Society of New Hampshire, the Science Center of New Hampshire (at Squam Lake), the New Hampshire Fish and Game Department, the New Hampshire Science Teachers Association, and the New Hampshire Environmental Educators Group also provide inservice.

Are credits available for EE inservice?
Teachers must acquire fifty staff development hours every three years, twenty of which must be in their endorsed subject area(s). Teachers need to receive approval from their own districts to use an environmental education program for continuing education units.

What motivates teachers to attend EE inservice?
Teachers are motivated by a natural area for interdisciplinary learning and needs for re-certification. Stipends through the Eisenhower program provide good incentives.

What teachers are most and least likely to attend EE inservice?
Many elementary schools address environmental education issues. Hendry feels elementary teachers are experienced at hands-on activities such as those commonly used in environmental education. Most environmental education at the high school level occurs in biology and social studies classes.

According to Hendry, "many schools consider their science programs to be environmental." Environmental education is also covered in many social studies curricula and some English curricula use a "whole-language approach" that includes environmental issues. Many schools have initiated recycling programs and some high schools are involved in watershed monitoring programs.

What are the needs of EE inservice providers?
Inservice providers are "all very talented and committed," says Hendry. They participate in regional conferences and are well-informed about educational resources. Hendry believes they could use more financial resources. Eisenhower funds for teacher training are helpful, but environmental education organizations operate on a shoestring budget and schools are struggling to purchase computer hardware, environmental education software, and transportation for field trips.

Hendry feels trainers could help teachers see the need for environmental education in their curricula, understand how environmental education fits into what they are already doing, and discover how to fit environmental education into their already busy schedules. Teachers also need follow-up support to assist them in implementing what they have learned.

Are there state board of education guidelines for EE inservice?
[no information given]

Is there a legislative mandate for EE inservice?
[no information given]

New Jersey

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How is EE inservice coordinated?
There is not much coordination in the state, which is divided into two distinct regions: the industrial urban north and the agricultural rural south.

Who provides EE inservice?
Although the Department of Education conducts some inservice, the Department of Environmental Protection and Energy conducts the majority of inservice. The Audubon Society also offers EE inservice.

Are credits available for EE inservice?
There is no requirement for teacher re-certification. However, districts have Professional Improvement Plans, in which pay increases and tenure are, in part, based upon continuing education units. Credits are accepted from colleges only. Programs such as Project Learning Tree (PLT) and Project WILD do not count toward continuing education credit.

What motivates teachers to attend EE inservice?
[no information given]

What teachers are most and least likely to attend EE inservice?
The primary grades are hardest to reach, because they don't teach science as a separate subject. Teachers in upper elementary and middle schools and high school biology teachers are easiest to reach with environmental education inservice.

What are the needs of EE inservice providers?
Many trainers lack adequate teaching skills, an understanding of environmental education content, and have difficulty communicating the interdisciplinary nature of environmental education.

Are there state board of education guidelines for EE inservice?
Core proficiencies were set during the 1989-90 school year for secondary science. Each of the six science courses included an environmental strand. This year, a new set of guidelines for K-12 will come out and will include an environmental strand throughout.

Is there a legislative mandate for EE inservice?
In April, 1989, Executive Order No. 205 created the New Jersey Environmental Education Commission, comprising representatives from formal education, government, environmental groups, civic, public interest, professional and youth organizations, business and industry, the religious community, agriculture and environmental health. The Commission has twice submitted to the Governor a Plan of Action for Environmental Education in New Jersey, on June 1, 1990 and on April 1, 1993.

New Mexico

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How is EE inservice coordinated?
The Department of Education coordinates inservice very informally. The Environmental Education Association of New Mexico is six months old [at time of survey response] and is currently in the process of recruiting members. It intends to serve as a clearinghouse for resources, such as a speaker's bureau, for teachers.

Who provides EE inservice?
The State Forestry Office coordinates Project WILD, Project Learning Tree (PLT), and Project WET. The Department of Game and Fish also coordinates Project WILD, which is popular among teachers. The Energy, Minerals and Natural Resources Department conducts workshops in the area of recycling and reuse.

Are credits available for EE inservice?
Teachers receive no inservice credit for their participation in workshops such as Project WILD.

What motivates teachers to attend EE inservice?
Teachers are motivated by personal desire to learn more about their environment and to strengthen their science background.

What teachers are most and least likely to attend EE inservice?
[no information given]

What are the needs of providers?
[no information given]

Are there state board of education guidelines for EE inservice?
There are no EE inservice guidelines for teachers. The State Board of Education has a new Competency Framework which contains broad statements, fourteen of which are for science, one of which deals with environmental education.

Is there a legislative mandate for EE inservice?
No.

New York

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How is EE inservice coordinated?
A Governor's Environmental Education Task Force is developing a report on the state of EE in New York. Representatives on the Task Force include: the Education Department, Department of Environmental Conservation, Office of Parks, Recreation, and Historic Preservation, and the Adirondack Park Agency. Numerous private, not-for-profit and educator associations are also represented. An interim report with recommendations should be ready by next winter session.

Some coordination is also done by the Department of Education through its work with the Association of Museums, which has an active educational network.

Who provides EE inservice?
The primary EE inservice programs are Project Learning Tree (PLT) and Project WILD, conducted through the Department of Environmental Conservation and the Education Department. Thirty to forty nature centers in the state and the Association of Museums also provide some inservice training for teachers.

Are credits available for EE inservice?
There are no certification requirements for EE inservice. Once teachers have been employed with the system for five years and have completed a masters degree, they are permanently certified. School districts support outcome-based education workshops usually offered through the universities.

What motivates teachers to attend EE inservice?
Teachers are motivated by contract provisions which yield pay for inservice credit. Some workshops, like PLT and Project WILD, are free and offer free materials. Many school districts grant participating teachers release time for attending. These appear to be effective motivators. PLT and Project WILD facilitators receive stipends for presenting workshops.

What teachers are most and least likely to attend EE inservice?
PLT and Project WILD reach primarily elementary teachers. EE inservice opportunities in the state generally do not match well with subjects other than science, and to a lesser extent, social studies.

What are the needs of EE inservice providers?
Inservice providers have the materials, but need administrative support and a budget. There is also a need for providers to gain a better understanding of teaching skills, EE content/background, and EE as interdisciplinary.

Are there state board of education guidelines for EE inservice?
No.

Is there a legislative mandate for EE inservice?
No.

North Carolina

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How is EE inservice coordinated?
The Office of Environmental Education coordinates EE inservice among units in the Department of Environment, Health, & Natural Resources. These units include the Division of Forest Resources (Project Learning Tree), Wildlife Resources Commission (Project WILD), the Division of Soil and Water, the NC Museum of Natural Sciences, the NC Aquariums, the NC Zoological Park, the Department of Parks and Recreation, and others. Taylor says there is a need for coordination among ALL EE inservice programs in the state.

Who provides EE inservice?
(See above) In addition to programs within EHNR, North Carolina is fortunate to have Sea Grant.

Are credits available for EE inservice?
Credits are available for EE inservice.

What motivates teachers to attend EE inservice?
Taylor says that teachers are hungry for sound EE programs, materials, and the training in how to use them. They are also motivated by credits received for attendance. Many inservice programs are offered free of charge, which encourages teacher attendance.

What teachers are most and least likely to attend EE inservice?
Taylor says that elementary teachers are the primary focus to date in the department's EE programs and thus are more likely to attend. Her office is trying to promote EE inservice to non-science teachers, but says that it is not easy to do since the communication networks are more challenging to plug in to. EE inservice has been more attractive to rural teachers than urban or suburban in North Carolina.

What are the needs of EE inservice providers?
Budgets are still tight and there is always a great need for more staff to meet the teacher demand. Taylor says there is a need for materials and training on the use of computers and technology in EE, with specific applications to North Carolina. The value of computerized mapping and geographic informational manipulation is yet untapped. Taylor notes that inservice providers need greater knowledge of, and access to, materials currently available in the state. From there, a strategy to identify and fill gaps will be developed.

Are there state board of education guidelines for EE inservice?
No.

Is there a legislative mandate for EE inservice?
There is not legislatively mandated EE inservice in North Carolina.

North Dakota

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How is EE inservice coordinated?
"It [environmental education] is very scattered and would be better if coordinated," says Eriksmoen. The Department of Public Instruction, in cooperation with other agencies, tries to ensure some sort of coordination by "trying to get more involved in it [environmental education], but a lot hinges on the U.S. EPA's grant applications. If we see information about curricula that one agency puts out, we try to notify other agencies that could use it." Eriksmoen is trying to link agencies to cover a wider spectrum, provide meaningful materials, and avoid duplicated effort. "More than anything, we're trying to facilitate their [other agencies'] efforts, whether it's putting on workshops, developing curricula, or providing speakers."

Who provides EE inservice?
The Department of Public Instruction cooperates with state resource agencies on projects such as: Project Learning Tree (PLT), Project WET, and Project WILD. The Game and Fish Department co-coordinates Project WILD and the Water Commission co-coordinates Project WET. The Health Department and the Department of Parks and Recreation provide inservice.

The Geographic Alliance, funded by the state legislature and National Geographic, also provides inservice. Eriksmoen and a University of North Dakota geographer, Dr. Douglas Munsky, participate in *Workshop on Water* (WOW), a national program funded by National Geographic. Teachers from across the country spend a week in Colorado and a week in California attending water quality workshops.

Are credits available for EE inservice?
Yes.

What motivates teachers to attend EE inservice?
"Stipends never hurt" and "course credit is definitely part of it." Teachers are more motivated to attend if expenses are paid and workshops are in enjoyable locations. Workshop topics should explore "the aspects of being a better teacher," which includes increasing content knowledge and increasing awareness of teaching techniques.

Motivating teachers to attend workshops is a greater problem than notifying people of workshops. Newsletters and computer networks make it fairly easy to reach teachers, but if teachers do not see the benefit of environmental education in their classrooms, they won't go. "We have to sell it to them [teachers]. They already have more on their plates than they [have time to] teach."

What teachers are most and least likely to attend EE inservice?
Teachers who see a need for including EE in their curriculums are most likely to attend.

What are the needs of EE inservice providers?
Eriksmoen believes trainers need to show a direct link between environmental education and teachers' content areas. He also believes trainers should expose teachers to more in-depth information. Because environmental

education is so broad, "it wouldn't hurt them [teachers] to have more in-depth workshops."

Are there state board of education guidelines for EE inservice?
Conservation education in the elementary grades is mandated by state statutes. Districts set curriculum content.

Is there a legislative mandate for EE inservice?
There are no specific state requirements. "North Dakota doesn't like a lot of mandates."

Ohio

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How is EE inservice coordinated?
The Ohio Conservation and Outdoor Education Association has state-wide and regional meetings. Inservice efforts are scattered and conducted by many organizations, but coordination is minimal.

Who provides EE inservice?
The Department of Education coordinates Project Learning Tree (PLT) and Project WILD with the Department of Natural Resources (ODNR). ODNR has several environmental education programs including *Tree Source* and *Super Saver Investigators*.

Preservice is provided by many teacher education institutions. Ohio State University at Newark offers an environmental education component in its teacher education program, through its science and social studies methods courses.

Are credits available for EE inservice?
Some combination of university credit and continuing education units is required of teachers every four years. Inservice providers can award credits provided they receive approval from the Department of Education.

What motivates teachers to attend EE inservice?
Personal interest is a major force but recently the push for hands-on science education has caused a substantial increase in EE.

What teachers are most and least likely to attend EE inservice?
African-Americans are the group hardest to reach. At a recent Outdoor Education Association meeting, for example, perhaps the first African-Americans to attend the meeting in twenty-five years were brought by their college methods instructor.

What are the needs of EE inservice providers?
Hug notes that an increasing number of workshop leaders are non-educators. He feels these leaders must understand issues in education and need to be knowledgeable about the field of teaching and learning.

Are there state board of education guidelines for EE inservice?
No.

Is there a legislative mandate for EE inservice?
No.

Oklahoma

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How is EE inservice coordinated?

A 1992 state law gives the Oklahoma Conservation Commission coordinating responsibilities for environmental education which it assumed January 1, 1993. The Conservation Commission was chosen to coordinate environmental education in part because it has well-developed contacts with local communities throughout the eighty-nine local Soil and Water Conservation Districts. The Conservation Commission now coordinates the State Environmental Education Coordinating Committee which has monthly meetings with representatives of state agencies. The Department of Education sends three representatives to this Committee. Weiser co-coordinates Project WILD and Project Learning Tree (PLT), coordinates the eighty-nine conservation district programs and serves as the EE coordinator for Oklahoma.

Weiser works closely with individuals in other state departments. For example, she is involved in projects with the Social Studies Coordinator, Science Coordinator, and Physical Education Coordinator at the Department of Education, and with personnel from the Department of Wildlife Conservation and Department of Agriculture/Forestry Services. The Conservation Commission works through the Soil and Water Conservation Districts to disseminate much of its materials.

Who provides EE inservice?

There are 560 school districts in Oklahoma. Districts generate their own staff development plans based on teachers' expressed needs. Teacher inservice therefore varies from district to district. Seven Professional Development Centers, all funded by the state legislature, provide teachers and administrators with a workroom, a resource library with books and audio and video resources, and inservice training opportunities.

The Department of Environmental Quality (DEQ) conducts training for educators and has adopted *Away with Waste* from Washington State to fit Oklahoma's situation. DEQ was created by the 1992 state agency consolidation law. Other state agencies that conduct inservice are the Department of Wildlife Conservation, the Department of Agriculture/Forestry Services, and the Department of Education.

Many colleges and universities have formed partnerships with the local Soil and Water Conservation Districts to provide inservice. For example, Rogers State College and the Rogers County Conservation District offer workshops in water quality testing and other hands-on activities that take teachers outside. Workshops include sessions on how to make equipment such as insect nets that teachers can use with their classes. Northeastern Oklahoma State University and the Cherokee County Conservation District have a week-long conservation education leadership training program for classroom teachers. Similarly, Northwestern Oklahoma State University and East Woods Conservation District provide a *Resource Awareness Week*.

Are credits available for EE inservice?

Teachers must earn staff development points. Project WILD and PLT each count as six hours of staff development credit. Teachers can earn one hour of graduate credit for a week-long course such as that offered by the Northeastern Oklahoma State University and the Cherokee County Conservation District. Many colleges and universities offer WILD and PLT for credit.

What motivates teachers to attend EE inservice?
Weiser says a good incentive is to provide teachers with free materials, such as posters, resource materials and insect nets, that they can then use in the field with their students. Money is also a good incentive; many trainings occur during teachers' personal time, such as on weekends or during the summer, and it is important to compensate them with a stipend for workshop attendance.

What teachers are most and least likely to attend EE inservice?
Elementary teachers are more involved in environmental education than middle and high school teachers. Weiser believes secondary teachers are more focused on one subject and are forced to cover more "subject-specific" material. Elementary teachers, on the other hand, teach more than one subject and find it is easier to become involved in interdisciplinary teaching.

What are the needs of EE inservice providers?
Weiser believes teachers are incorporating environmental aspects into language arts, reading, etc. However, she feels that teachers need more imagery of how to teach environmental education in an interdisciplinary fashion. In addition, she believes there need to be changes in the methods courses taught at universities.

Weiser believes Project WILD and PLT trainers are "extremely well-equipped." In Oklahoma, an educator and a "resource-type" person are typically paired so that teachers have access to both during the training.

Weiser offered the following suggestions for improving teacher inservice:
- Develop materials that explain the benefits of environmental education to both teachers and administrators. She says that often a teacher may be motivated but has difficulty getting the rest of the school excited.
- Develop materials that *show* teachers how to incorporate environmental education into their specific subject areas (i.e. using an environmental bill to learn about legislative processes in a civics class, rather than having students memorize the process for a generic bill). She says that many teachers may say: "I teach math. But how can I teach math outside?"
- Provide an overview of quality programs in which teachers can involve themselves.
- Develop standards and evaluate existing programs and curricula.
- Provide materials on developing (i.e. "how-to's" and "advantages of") outdoor classrooms. Weiser says that many teachers are interested in developing permanent outdoor classroom sites on or near their schools and would like more information on this.

Are there state board of education guidelines for EE inservice education?
There is no environmental education mandate from the State Board of Education.

Is there a legislative mandate for EE inservice?
There is no environmental education mandate from the State Legislature. Three bills have passed in the last three years that place partial influence on EE, although nothing emphasizes teacher training.

1. A broad educational objectives bill mentions EE "indirectly," suggesting that students "will interpret and draw conclusions" from environmental science data.
2. A license tag bill passed approximately two years ago allowing people to purchase specialized license plates for twenty-five dollars. One or two dollars goes for taxes and the rest funds EE through DEQ.
3. A 1992 State law giving the Conservation Commission environmental education coordination responsibility is intended to coordinate Oklahoma's seven to ten regulatory and non-regulatory state agencies dealing with the environment. The Conservation Commission, has been given coordinating responsibilities, while other agencies are authorized to continue their involvement in EE in their resource specialization.

Oregon

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How is EE inservice coordinated?
The 150-member Environmental Education Association of Oregon (EEAO) is the primary group that focuses on staff development for teachers. The Department of Education does not have a full-time environmental education specialist. Thiess is responsible for providing leadership in K-12 science program development and implementation. These efforts include integration of EE in the science program. He serves as Oregon's environmental education representative on the Western Regional Environmental Education Council (WREEC).

Who provides EE inservice?
EEAO and WREEC conduct environmental education inservice. The Oregon Science Teachers Association, Northwest Association for Marine Education, and a wide variety of state and local organizations provide workshops, tours, trips, etc.

The Oregon Department of Fish and Wildlife coordinates Project WILD. Oregon State University coordinates Project Learning Tree (PLT) and recently received a grant to add four full-time field people to conduct PLT teacher training throughout Oregon. In addition, Oregon will soon utilize state water resources staff to implement Project WET. The Department of Education is working to integrate Project WET, Project WILD, and PLT into the K-12 curriculum.

Are credits available for EE inservice?
Oregon's Teachers Standards and Practices Commission is responsible for certification. Teachers design their hours themselves.

What motivates teachers to attend EE inservice?
Thiess believes it is important to have interesting and exciting opportunities for teachers to learn about the community in which they teach. Thiess suggests staff developers add the use of computer conferences, distance learning, and visiting speakers to make workshops interesting and relevant. According to Thiess, approximately 30% of teachers are highly motivated to attend every program, 40% may attend if convinced, and the rest are not interested for a variety of reasons (e.g., low interest level, other work, not enthused by informal learning, are near retirement or deal solely with the formal side of education). "The solution is to take the subject they [teachers] are teaching and give them experiences of collaboration and multidisciplinarity. This is particularly effective in elementary schools or collaborative learning scenarios." He suggests sending teams of teachers to workshops because "there's a lack of administrative leadership – it's teams of teachers that change things." Teachers must be empowered by the administration to develop a sense of ownership.

What teachers are most and least likely to attend EE inservice?
"I just don't see high school social science teachers spending much time incorporating environmental education into their lessons. Social science teachers should be working hand-in-hand with science teachers. Many lack sufficient science background" to teach about environmental issues. For them, inservice could teach, for example, "the connection between recreation and laws and the environment."

What are the needs of inservice providers?
Thiess believes that staff development personnel need to help teachers learn how to integrate environmental education into subject areas. He says, "It's too easy to just put a value judgement on things–people need to know how to perform quantitative analysis. For example, how do you determine 'parts per billion'? Teachers need to understand the environmental impacts of different quantities of pollution." There is a need for inservice staff to be scientifically, mathematically and technologically literate.

Thiess believes that classroom teachers also need to "see the bigger picture ... yet maintain their strengths in their individual specialties." Teacher education should "focus on a natural resource and then expand the individual's literacy about many aspects that effect natural resources."

Thiess would like to see a national push to involve the social sciences in environmental education. "We must be able to present situations and cases for and about the environment. We need to move beyond the traditional classroom setting and place the teacher and learner in the role of investigator."

Are there state board of education guidelines for EE inservice?
No.

Is there a legislative mandate for EE inservice?
There is no mandate.

*NOTE: Elizabeth King, Reading/Environmental Education Specialist, assumed responsibility for EE at the Department of Education while this survey was in progess.

Pennsylvania

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How is EE inservice coordinated?
The Pennsylvania Office of Environmental Education is the hub of the coordination network.

Who provides EE inservice?
Twenty percent of all inservice is conducted by individual school districts. The Pennsylvania Office of Environmental Education coordinates Project Learning Tree (PLT) with the Department of Environmental Resources and distributes Naturescope. The Pennsylvania Fish Commission and the Pennsylvania Game Commission coordinate Project WILD.

Are credits available for EE inservice?
Each of the twenty-nine Intermediate School District Units independently certify courses for credit, which are then approved by the Department of Education. Six credits are needed for permanent certification. Courses must be fifteen hours minimum to qualify for one credit. Approximately half of all inservice programs are available for credit. Of the seventy to eighty workshops delivered by the Office of Environmental Education, five are for credit.

What motivates teachers to attend EE inservice?
Vathis and Steinheart feel the most important incentive is credibility. Once the credibility of an environmental education program is established, word-of-mouth attracts new teachers. They feel that teachers can find good workshops if they are interested. Teacher interest depends to a large degree on how districts arrange curriculum and coursework.

What teachers are most and least likely to attend EE inservice?
There is interest in environmental education, especially among K-8 teachers. The Office of Environmental Education recently conducted preservice workshops for many non-science teachers in fields such as history, foreign language, and English. Chemistry and Physics teachers are not well-reached.

What are the needs of EE inservice providers?
Vathis and Steinheart feel resource managers need to be more effective and credible as educators – that inservices need to present teachers with different ways of doing things, but that good instruction on the part of trainers is critical. Trainers need to apply content to local needs, address instructional techniques as well as content, and provide teachers with information and materials that are effective in the classroom.

Are there state board of education guidelines for EE inservice?
State Department of Education guidelines call for a planned course in EE each year for students age 5-10. Each planned course must have an action component. In addition, there is a planned environmental course in middle school and high school. Agricultural issues are also addressed in current guidelines. The Department of Education is currently working on outcomes for EE, establishing benchmarks for students at several levels.

Is there a legislative mandate for EE inservice?
[no information given]

Rhode Island

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How is EE inservice coordinated?
Coordination is informal. Ferrance describes Rhode Island's environmental educators as an "in-bred" group – everyone knows everyone else.

Who provides EE inservice?
The Department of Environmental Management coordinates Project WILD and Wet. The Department also received an EPA grant for a literacy-based project entitled *Saven R Drinkwater*. The University of Rhode Island (URI) provides non-credit workshops, general college credit courses, and inservice opportunities for teacher certification. URI owns the W. Alton Jones Environmental Center, which offers teacher training programs. Rhode Island Environmental Education Association offers numerous teacher training opportunities and has a yearly conference. The Audubon Society, Roger Williams Park and Museum, and Save-the-Bay offer programs for teachers.

Are credits available for EE inservice?
Initial certification lasts for three years. Six credits, three of which can be obtained through inservice, are required for re-certification every five years unless teachers have a masters degree in their area of certification.

What motivates teachers to attend EE inservice?
Ferrance stressed the necessity of having "a carrot" such as materials or books for teachers to take back to the classroom. "Teachers want to come away with something they can touch and use. The diehards, those who keep coming back, want new ideas, knowledge, and techniques."

What teachers are most and least likely to attend EE inservice?
Most interest in environmental education is with middle and elementary school teachers. High school teachers are harder to interest in EE inservice. Ferrance believes they are more rigid in their curriculum due to course requirements and rely more on textbooks than elementary level teachers.

What are the needs of EE inservice providers?
Ferrance feels that the inservice providers are well-prepared. She would, however, like to see more materials for trainers that address current issues and problem-solving. Ferrance says teachers are often uncomfortable when they use a curriculum that encourages children to make judgments and values. Teachers need information on how to conduct meetings, how to help students explore the pros and cons of issues, and how to resolve conflict. Teachers need experience helping students develop decision-making and communication skills.

Are there state board of education guidelines for EE inservice?
No.

Is there a legislative mandate for EE inservice?
There is no state mandate. Reasons for this include: local control by the state's thirty-seven school districts, lack of funding, and the fact that other issues supersede EE in the legislature.

*NOTE: Ferrance is no longer with the Department and, at the time of printing, has not yet been replaced.

South Carolina

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How is EE inservice coordinated?
[no information given]

Who provides EE inservice?
The Department of Education uses Eisenhower funds to develop and implement teacher training. The Department developed, in conjunction with the South Carolina Land Resource Commission, the *South Carolina Maps and Aerial Photographic Systems*, an interdisciplinary program that makes use of geography, history, environmental education, economics, etc. The Department of Education also works with the Wildlife Department, which coordinates Project WILD, and the Forestry Department, which coordinates Project Learning Tree (PLT). The South Carolina Land Resource Commission offers summer workshops on natural resource conservation. School districts offer workshops, and the Environmental Education Association of South Carolina holds a yearly meeting and workshop. The 1993 annual meeting was attended by approximately one hundred educators.

Are credits available for EE inservice?
There is no advanced certification required of teachers.

What motivates teachers to attend EE inservice?
[no information given]

What teachers are most and least likely to attend EE inservice?
There has been a tremendous response by teachers to Project WILD.

What are the needs of EE inservice providers?
Sinclair feels that providers are adequately prepared.

Are there state board of education guidelines for EE inservice?
No. The Board of Education, as a part of the 1986 Defined Minimum Program, has specified that "environmental education is required as an integral part of science, social studies, and health" for K-8. In addition, "all accredited high schools shall include environmental studies as part of their instructional program." Implementation of these are left to the discretion of individual school districts. A new program is currently being written by the Board of Education.

Is there a legislative mandate for EE inservice?
There is no mandate for EE for teachers.

South Dakota

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How is EE inservice coordinated?
There is no coordination of EE inservice. Coordination of environmental education programs was lost when specialist positions were eliminated from the Department of Education.

Who provides EE inservice?
The Department of Education provides workshops on occasion but has not conducted any for several years. Games, Fish, and Parks has been involved in some EE. The Department of Environmental Management (DEM) administered PLT and WILD for a while, but Hauck is not sure how actively involved in these programs the DEM is now.

Are credits available for EE inservice?
Teachers must obtain six credit hours every five years to update their certification. Some inservices are coordinated with local universities to provide college credit. Most teachers take university courses to update certification. Some university courses incorporate Project WILD and Project Learning Tree (PLT), but teachers don't prefer these because these courses offer fewer college credits than other university courses. Northern State University at Aberdeen provides college credit for teacher re-certification.

What motivates teachers to attend EE inservice?
Personal interest in environmental issues and recognizing the need to teach about the environment motivates teachers to attend inservice.

What teachers are most and least likely to attend EE inservice?
[no information given]

What are the needs of EE inservice providers?
"Where do teachers find room to add to an already overcrowded curriculum? We need to set solid state-wide standards and provide incentives for schools to examine desired learning outcomes."

"A lot of the environmental education programs in the past that have come into the state have been a one-shot thing." Hauck is in favor of ongoing programs and believes South Dakota needs someone to coordinate them.

"We're a rural state. Teachers can get out of the city easily enough. One thing would be to show teachers how to use available resources" such as streams and parks located in close proximity to their own schools.

Are there state board of education guidelines for EE inservice?
The State Board of Education does not require any environmental education inservice or preservice for teacher certification. Whether environmental education is a part of teacher certification depends on the teacher education programs at universities.

Is there a legislative mandate for EE inservice?
No.

Tennessee

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How is EE inservice coordinated?
The Department of Conservation Education/Project CENTS (Conservation Education Now for Tennessee Students) provides a coordinating function through facilitator training and recruitment for Project WILD and Project Learning Tree (PLT). Conservation Education has been a department within the state education agency for ten years. Project CENTS is a coalition of the Tennessee Forestry Association, Tennessee Wildlife Resource Agency, Tennessee Conservation League, Tennessee Division of Forestry, Tennessee Department of Environment and Conservation, and the Department of Education.

Who provides EE inservice?
Conservation and environmental education centers provide EE inservice programs. The Conservation Education Department of the Department of Education administers PLT and Project WILD. The Department of Education will also provide waste management education to teachers as mandated by the Solid Waste Management Act of 1991.

Are credits available for EE inservice?
Yes. Teachers are required to attend inservice programs each year above and beyond time spent in the classroom. Teachers can fulfill inservice requirements with EE inservice workshops if they can show that the program is relevant to their classroom.

What motivates teachers to attend EE inservice?
Wildt feels a primary motivator is the need to earn inservice credit hours. Teachers are also motivated to attend the PLT and Project WILD workshops because of free curricular guides and because the programs have a reputation for being fun. The value of EE is increasing and teachers are wanting innovative ways to incorporate it into their lesson plans.

What teachers are most and least likely to attend EE inservice?
Wildt says that science teachers have traditionally been more likely to attend EE inservice workshops because they are more comfortable with the content. Wildt says rural teachers are difficult to reach; the Department of Education is "spread thin" and is unable to promote its services effectively for the remote areas of the state. The state education agency currently has only one staff member to train PLT and Project WILD facilitators, but there are already approximately 160-180 trained facilitators across the state.

What are the needs of EE inservice providers?
Wildt says the Department of Education would benefit from more personnel to train teacher trainers and provide more EE services.

Are there state board of education guidelines for EE inservice?
No. There are EE learning objectives for students but no EE inservice training requirements for teachers. Wildt notes that the K-8 Tennessee Comprehensive Assessment Program (TCAP) contains more EE learning

objectives in the social studies content area than in science. For example, a learning objective for Kindergarten is "pollution can be detrimental to health and jobs." There are eleven more EE objectives in third grade social studies than in science. She does not think TCAP has significantly increased the number of teachers interested in EE inservice education, but she hopes to use the objectives to emphasize the relevance of EE to educators of all subject areas.

Is there a legislative mandate for EE inservice education?
Teachers are not mandated to attend EE inservice training. The Solid Waste Management Act requires the Department of Education to provide solid waste management education to school districts that voluntarily request it. The Department of Education hopes to promote the program to increase school district participation.

Texas

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How is EE inservice coordinated?

The Texas Environmental Education Advisory Committee (TEEAC) was established by Senate Bill 1340 and is charged with fostering the development of environmental education materials to assist teachers, students and administrators. The bill was passed in May 1991, but was not funded. Pickhardt's position is funded by a grant from the Texas Water Commission. She is a contract employee with the Texas Education Agency and serves as staff to TEEAC.

TEEAC's enabling legislation was intended to ensure representation to all stakeholders. TEEAC has representatives from teachers' groups, business and industry, environmental non-profits, and state agencies involved in environmentally-related activities, including the Water Commission, the Air Control Board, Parks and Wildlife, Water Development Board, Soil and Water Conservation Board. Currently there are approximately 40+ members, and there are now others, such as the Texas Department of Transportation, who want to be represented. A process to allow new members is now being developed.

TEEAC obtained 501(c)(3) status as a non-profit organization, allowing it to receive corporate gifts and to fundraise to reduce its dependency on state legislative funding. *Take Stock in Texas* is one fundraising effort that allows people to donate money to environmental education and receive a mock stock certificate in return.

One of TEEAC's first tasks has been to discover which organizations already offer EE instruction for teachers. TEEAC decided to focus on coordinating staff development efforts because a substantial variety of staff development opportunities in environmental education already exists.

TEEAC now offers an Environmental Educators Recognition Certificate – a voluntary program that awards teachers who participate in forty-five hours of instruction in environmental education. Inservice providers must submit a workshop description that TEEAC evaluates based on standards it developed for environmental education learning sites. Approved sites are sent stickers that teachers collect when they attend a workshop. Once a teacher collects forty-five hours worth of stickers, s/he receives a certificate, a letter sent to the school administrator, commendation letters for her/his personnel files, and a press release sent to the local paper. So far, TEEAC has endorsed approximately forty sites or programs, including nature centers, zoos, museums, and for-profit establishments such as Sea World or Fossil Rim.

Who provides EE inservice?

Here is a sample, and by no means complete, list of inservice providers:

- City of New Braunfels Parks and Recreation Department
- Texas Water Commission
- Texas Education Agency
- Houston Zoological Gardens
- Houston Audubon Society
- Fossil Rim Wildlife Center
- Lamar University
- University of Texas
- Texas Soil and Water Conservation Board
- Regional Education Service Centers
- YMCA Camp Grady Spruce
- Earth Foundation
- Sea World
- Rice University Center for Education
- Baylor College of Medicine
- Wild Basin Preserve

TEEAC has adopted ten core themes of environmental education, including air quality, human population and society, aesthetic and built environments and health. TEEAC requires that programs receiving endorsement have some balance across these themes. Pickhardt's gut reaction is that inservices probably focus more typically on recycling, ecosystem management, and water quality than environmental health and air quality.

TEEAC will soon require programs that receive endorsement to participate in a TEEAC training-the-trainer inservice. TEEAC will conduct on-site evaluations, and inservice providers are also required to conduct their own evaluations.

What motivates teachers to attend EE inservice?
Pickhardt says it is important to treat teachers as professionals. For example, trainings should not always be held on weekends during teacher's personal time. Teachers should be provided release time and be given a stipend for attending trainings.

Some Service Centers have been particularly effective at reaching teachers by offering interesting and creative workshops in unique settings. One example is a training in which teachers are transported, by Amtrak, to an environmental education ranch in western Texas. Teachers attend free of charge and participate in a rope's course, horseback riding, as well as rigorous classroom instruction and fieldwork.

Pickhardt believes "it is difficult" to promote interdisciplinary education when textbooks are still designed subject-area by subject-area. She says it is easier to motivate teachers in interdisciplinary instruction at the elementary level because they often have the same group of children all day and can readily integrate subject areas.

What teachers are most and least likely to attend EE inservice?
[no information given]

What are the needs of EE inservice providers?
Pickhardt believes the potential for environmental education is "limitless." She says that, through her position, there are a lot of "marriages to make." For example, there is a joint program between the City of Austin and the Texas Environmental Education Association called the *Green Builders Program* which offers a 2-day workshop for builders on environmentally-sound construction. Pickhardt learned of this program and is now talking with the Building Trades Coordinator at the Department of Education because she believes it is an excellent opportunity for building trades teachers. She says agriculture teachers want more training in environmentally-sound agriculture such as organic vegetable growing.

Pickhardt says that inservice providers vary in their level of effectiveness. Some have years of experience in environmental education and teaching. Others are familiar with programs like Project WILD, but don't have the depth of experience.

Are there state board of education guidelines for EE inservice?
The State Board of Education Rules for Curriculum, Chapter 75 contains essential elements for content areas, a number of which are related to environmental education. *Environmental Essential Elements Across the Curriculum*, produced by TEA staff, lists environmentally-related essential elements.

Is there a legislative mandate for EE inservice?
(See above) In May, 1991 the 72nd Texas Legislature passed Senate Bill 1340 establishing, but not funding, the Texas Environmental Education Advisory Committee (TEEAC).

Utah

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How is EE inservice coordinated?

The Utah Society for Environmental Education was established in 1981 to coordinate environmental education in Utah. The Society has an annual budget of $34,000. $23,000 is from cooperative agreements with the Forest Service and the Bureau of Land Management; $6,000 is from projects, like the natural resource camp for minority youth, in which the Society charges at-cost fees; and $2,500 is from individual and organizational membership dues. Currently, there are 52 organizational members including Audubon, the National Energy Foundation, the Utah Farm Bureau Federation, and eight state departments. The State Department of Education is not a member, however several department employees are individual members.

From 1972 until 1980, a State Advisory Committee for Conservation Education established local advisory committees around the state. Fridley is hoping to organize a similar committee composed of representatives of natural resource agencies. The committee would develop environmental education programs, connect teachers with local agency representatives and build an environmental education communication network.

Who provides EE inservice?

In some cases, personnel at the school district level design and conduct environmental education workshops. The Department of Education has a small staff composed mostly of subject specialists. Bonnie Morgan of the Department of Education oversees curriculum development and supervises consultants. She is personally interested in environmental education and spearheaded an effort to develop environmental education modules at all grade levels across the curriculum. The University of Utah and Utah State University's College of Natural Resources both have degree programs in environmental education. Brigham Young University has some courses and offers training in PLT and Project WILD for preservice and college credit.

The United States Forest Service, the Bureau of Land Management, and the Soil Conservation Service, through local Soil Conservation Districts, provide teacher inservice. Several state agencies also provide inservice. The Department of Environmental Quality, the Utah Association of Conservation Districts, and the Soil Conservation Commission provide EE inservice. Several divisions of the Department of Natural Resources also provide EE inservice: the Division of Water Resources coordinates Project WET; the Division of Wildlife Resources coordinates Project WILD; the Division of State Lands and Forestry coordinates PLT; and the Division of Air Quality also provides inservice.

Are credits available for EE inservice?

Most environmental education workshops are available for credit, both "inservice" or "re-certification" credit (10 contact hours = one credit) and university credit (12 or 15 contact hours = one credit) is available.

What motivates teachers to attend EE inservice?

Incentives to attend workshops include re-certification requirements and the accompanying pay bracket increase. Fridley believes that teachers who attend environmental education workshops want to improve the way they teach and already have an interest in education about the environment.

Fridley says that personal contact is an important strategy for motivating teacher attendance. The Utah Society for Environmental Education organized the EE Teacher Network as a way to notify teachers of workshops. The EE Teacher Network consists of teachers who volunteer to share information on environmental education opportunities with other teachers in their building. This provides the Society with a personal contact. Eighty-four schools now have volunteers.

What teachers are most and least likely to attend EE inservice?
Project WILD and Project Learning Tree (PLT) have difficulty attracting secondary teachers. Fridley believes this is in part because the materials are presented in ways that do not fit well in forty minute subject periods. PLT is beginning to address this by developing modules.

What are the needs of EE inservice providers?
Fridley believes that inservice providers, in general, are effective. He would like to see more follow-up support to teachers and schools after workshops and feels Project WILD has good follow-up. He believes that there is a "critical mass that needs to happen at a school." Three to four teachers need to be involved in environmental education before an impact is felt at a school-wide level.

Are there state board of education guidelines for EE inservice?
There are no state standards for EE inservice.

Is there a legislative mandate for EE inservice?
No. There is currently an effort to examine the possibility to mandate environmental education at the state level. The Junior League and the Society sponsored an Environmental Education Summit, funded by the EPA. 120 people attended, and the possibility of a state environmental education act was explored. Fridley does not believe a state act will succeed; the Governor and state legislature are trying to eliminate federal and state level controls in all areas of state affairs.

Vermont

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How is EE inservice coordinated?
Coordination is accomplished through an umbrella group known as the Statewide Environmental Education Programs (SWEEP) and through the Forest Communications Council (FCC), a group of private companies, education representatives, and government agencies.

Who provides EE inservice?
The Vermont Department of Education, United States Forest Service, Vermont Department of Forest, Parks and Recreation, Vermont Fish and Wildlife, and various state colleges all provide inservice.

Are credits available for EE inservice?
Graduate credits are awarded through colleges and universities. Teachers need nine credits every six years to maintain license.

What motivates teachers to attend EE inservice?
Incentives for teachers to participate in inservice trainings include financial assistance to attend workshops and the availability of substitutes. Kousen manages Chapter II and Eisenhower funds, which are helpful in encouraging school districts to support environmental education inservice.

What teachers are most and least likely to attend EE inservice?
The most difficult teachers for inservice to reach are those "teachers that don't think of themselves as environmental educators." He believes this is particularly true of elementary and non-science secondary teachers. Kousen notes that less than 5% of Vermont's teachers will leave the teaching profession in the next five years, thus, preservice does not reach nearly as large an audience as inservice.

The Department of Education takes training workshops "on the road," thus to reach each school would require three years, so lack of human resources limits the number of teachers that can be reached. However, district-wide workshops supplement the one-to-one visitations.

What are the needs of EE inservice providers?
Kousen feels trainers need two things in particular: (1) classroom teaching experience, and (2) "to be ready to stretch the paradigm of what the classroom is about." He says there needs to be a change from traditional teaching styles toward more participatory teaching.

Kousen says he and his providers tend to prefer not to use packaged approaches to training. Workshops are generally developed with local district personnel to accommodate the interests and needs of the local teachers. Project WILD and Project Learning Tree (PLT) are used as examples of adaptive curricula.

Are there state board of education guidelines for EE inservice?
There is a framework for science education that incorporates environmental education, but schools do not use it effectively: "it is out of date and a new one is currently being worked on." EE is also included in the Social

Studies Framework which is likewise being revised. Vermont has received a substantial US Department of Education grant for developing new Interdisciplinary Frameworks.

Is there a legislative mandate for EE inservice?
Yes, as part of the *Forest Service Plan.* Vermont is 80% forests.

Other issues?
Vermont's effort to incorporate environmental education into vocational education is notable. Vocational education appears to be well supported, with fifty percent of Vermont's students passing through vocational courses. Most teachers in the state have taken EE workshops over the last twenty years. Major efforts are the result of teachers helping teachers – a very bottom-up approach rather than top-down. Teachers have developed many of their own curricula and a workshop training manual.

Virginia

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How is EE inservice coordinated?

There is no official coordination of the state's environmental education inservice efforts, but there is considerable communication among the various groups. The Department of Environmental Quality will publish and distribute an environmental education resource guide this fall.

Who provides EE inservice?

The following is a partial list of EE inservice providers:

- The Department of Environmental Quality (DEQ) was formed by the consolidation of several environment-related state agencies that now function as one. Educational programs remain an important focus.
- The Department of Conservation and Recreation provides a spectrum of information and educational functions and has made an extensive effort in state-wide EE.
- The Department of Game and Inland Fisheries provides information, public education and school-focused programs.
- The Department of Forestry provides Project Learning Tree (PLT) and other public education and school-focused programs.
- The Department of Mines, Minerals, and Energy works with the Virginia Energy Education Development (VEED) Project to conduct workshops in community colleges and public schools.
- The Virginia Cooperative Extension Service provides extensive information and educational resources for educators and students.
- The Virginia Department of Transportation coordinates the Adopt-a-Highway Program.
- The Virginia Institute of Marine Science conducts a broad spectrum of information, public education and school-focused activities and is part of the Federal Sea Grant network.
- The Virginia State Climatology Office provides climatological information useful for environmental issues study at middle and high school levels, and for background for teachers at all instructional levels.
- The Virginia Water Resources Research Center provides information on surface water, groundwater, and the Chesapeake Bay via publications, conferences and a newsletter.
- The Chesapeake Bay Foundation (CBF) operates a public education program as well as a significant school-oriented program. Each year over 10,000 students and 500 teachers participate in CBF programs that provide a variety of environmental education field experiences through several different mechanisms.
- The Alliance for the Chesapeake provides information, pubic education, and school-focused programs and publications, including the *Bay Journal*, river fact sheets, audiovisual presentations, volunteer monitoring programs, conferences, speakers, wetland field trips, beach cleanups, and information kits.
- The Izaak Walton League of America coordinates the Save Our Stream (SOS) Program.
- The DuPont Corporation makes available a K-6 supplementary waste management curriculum, *Solid Waste Management*, to school teachers.

- Virginia Power sponsors numerous teacher energy and environment workshops and mini-conferences throughout the school year and summer.
- The United States Department of the Interior–National Park Service offers educational programing that consists of teacher workshops and day visit programs targeted at elementary grades.
- The United States Department of the Interior–Fish and Wildlife Service offer informational materials and supplementary curriculum guides.
- The United States Department of Agriculture–Forest Service provides materials and workshops for teachers on the forest environment.
- The Virginia Association for Environmental Education provides a networking mechanism for environmental educators through its periodic newsletter.
- The Virginia Association of Science Teachers offers environmental-related programs at its annual conference.
- The Virginia Environmental Endowment is a private grant-making foundation which has made numerous mini-grants to individual schools for strengthening school curricula and community action programs.
- The Wildlife Center of Virginia is a nonprofit organization that conducts a variety of K-12 educational activities including numerous school programs and teacher staff development.
- The Mathematics and Science Center has provided field, laboratory, and classroom experiences for large numbers of teachers and students in the Richmond area for twenty years.

Are credits available for EE inservice?
Contact hours of inservice education can be applied directly to re-certification with prior approval of a teacher's primary administrator.

What motivates teachers to attend EE inservice?
Firebaugh listed the following incentives for encouraging teachers to attend workshops: opportunity for making professional contacts, becoming a member of a network, free materials, release time from other duties, special acknowledgments. In addition, ease of attendance, proximity, low or no cost for registration, and reputation of the activity as being "worth" the time also increase workshop attendance.

What teachers are most and least likely to attend?
There is no data.

What are the needs of EE inservice providers?
Preparation and skills vary greatly among environmental education inservice providers. Generally, skills and understandings trainers need to convey to teachers include the following:
- Understanding the natural world as a system; how all of the components interact and are interrelated; comprehending change, balance, and diversity in the physical and living environment.
- Observational skills using all the senses.
- Thinking and reasoning, problem-solving, and decision-making
- Using tools to measure, monitor, and utilize the environment.
- Critical attitudes such as skepticism, curiosity, respect for logic and rational thinking, open-mindedness, and demand for accuracy.
- Personal attributes such as perseverance, responsibility, and a love of learning.

Are there state board of education guidelines for EE inservice?
There are no State Board of Education guidelines specifically for EE inservice.

Is there a legislative mandate for EE inservice?
Environmental education has been "implicitly" mandated through discipline curriculum frameworks.

Washington

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How is the EE inservice coordinated?

The Environmental Education Association of Washington (EEAW) is an umbrella organization with origins in the outdoor education movement of the 1960's and 1970's. The EEAW retired itself and then was restored in response to a need for a body of environmental educators to lobby on behalf of environmental education interests given that state agencies and offices cannot lobby as well as an independent association or organization. The EEAW sponsors a conference every year to provide networking opportunities, and it disseminates materials and information through a newsletter. As an organization, EEAW does not conduct inservices, but it brings together consultants and resource people.

The Office of Environmental Education is primarily responsible for coordinating workshops, serving as a clearinghouse, and piloting projects for integrating K-12 in different regions in the state. Angell feels it is important that the state education agency has responsibility for environmental education. Angell feels the resource agencies are important in the field in which they are mandated, but the state education agency has a broader view of public education and understands the school culture. Resource agencies support K-12 education through the superintendent's initiative.

Who provides EE inservice?

The Office of Public Instruction submitted a 1992 grant application to EPA to design state-wide models to systematically infuse environmental education in schools throughout the basic education disciplines and school operations. The application was successful and development of 18 school models has begun. Presently, the Office of Environmental Education provides a limited amount of teacher inservice workshops because there is already an active community of EE inservice providers. These include: educational service districts, Adopt-A-Stream Foundation which has a team that educates teachers about watersheds, Project GREEN which trains teachers and students to monitor water quality, Energy Extension Office, Battell Institute at Hanford, Washington Toxics Coalition, NOAA (a national oceanic and atmospheric administrative program), University Extension of Washington State University, soil conservation districts, and state resource agencies.

Are credits available for EE inservice?

College credits and clock hours are available for EE inservice.

What motivates teachers to attend EE inservice?

Incentives include release time to attend workshops, substitute reimbursement for teachers, and the fact that school system personnel departments are looking for teachers with environmental education backgrounds. The belief that EE is critical to our future also continues to inspire teachers to learn more.

Angell says teachers often find out about inservice opportunities through "Clearing Magazine," the magazine spotlights local efforts and is a dissemination tool for environmental education opportunities for teachers.

What teachers are most and least likely to attend EE inservice?
Most of the general workshops are geared to elementary teachers, so there tend to be fewer secondary teachers at these workshops. There also tend to be fewer teachers of minority, urban, and poor students. There are efforts in Washington to address the environmental concerns of these populations. Angell feels there has been significant progress in the last few years. For example, members of the African-American community have become part of the Superintendent's Environmental Education Advisory Council, an appointed body with representatives from throughout the state. Business and industry, native people, educators and students, higher education, agriculture, state and federal resource agencies and environmental organizations are but a few of the interests represented.

Science educators tend to be more involved in environmental education than the other disciplines. Environmental education has benefited from its association with science education as the Office of Environmental Education has co-sponsored programs with science centers in Washington.

What are the needs of EE inservice providers?
Angell feels the existing level of inservice opportunities is insufficient. Angell provided an off-the-cuff estimate that 20% of Washington's 30,000 teachers have a "reasonable sense" of how to introduce environmental education into their classrooms, while the remaining 80% would benefit from inservice. Angell feels trainers need to provide information on environmental education resources particularly to entry level teachers.

There is a need to provide support to local inservice efforts. Efforts by the Office of Environmental Education have included sending teams throughout the state to work with teachers on issues of toxics, energy, and clean water. The grant monies for those projects have run out, and Angell says there is a limit to what existing personnel can do; providing approved consultants, and coordinating with other agencies are a few ways to support local resources given limited personnel time.

Are there state board of education guidelines for EE inservice?
A mandate passed by the State Board of Education requires that environmental education be incorporated in an interdisciplinary manner in K-12. The mandate was not given implementation funding. Angell says the community's response, (for the most part) was "what can we do with what we've got." A positive atmosphere has prevailed.

The Superintendents' Advisory Council for Environmental Education (mentioned above) was formed to develop a strategic initiative to carry out the State Board of Education's mandate in a coordinated manner. The Council has 60 representatives from business and industry, education, environmental education, teachers, school administration, Native Americans, and others. The Council produced the *Strategic Initiative Approach for Implementation* which focused on four substantive areas: program planning, program implementation, preservice and inservice, building facilities operation.

Over the past year the School Directors of Washington state sponsored a conference to produce a draft document that would serve as a model for use by the state's 296 autonomous school boards. The state guidelines for EE containing teaching goals and strategies, were developed seven years ago. Angell believes it is impossible to develop one state instructional program, but that models that districts may voluntarily adopt are useful.

Is there a legislative mandate for EE inservice?
(See above) Angell makes an effort to establish communication with each new state government administration, feeling it is important to communicate long term goals.

Wisconsin

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How is EE inservice coordinated?
The Department of Public Instruction (DPI) has one full-time specialist in EE, and the Department of Natural Resources (DNR) has several full-time and part-time specialists in EE. Wisconsin schools, DPI, DNR, Wisconsin Center for EE, Wisconsin Association for EE, and University of Wisconsin-Extension contribute to an environmental education newsletter that is distributed to teachers and members of the Wisconsin Association for Environmental Education. The Wisconsin Center for Environmental Education at the University of Wisconsin at Stevens Point (UWSP) does a great deal of state-wide coordination. Although there is much communication and opportunity, there are still quite a few independent efforts by various agencies, individuals, and organizations that offer their own services in the environmental education field.

Who provides EE inservice?
In addition to the Departments of Public Instruction and Natural Resources, a great many nature and environmental centers, residential facilities, parks, state and federal agencies, colleges and universities, etc. conduct inservice training.

Are credits available for EE inservice?
Equivalency clock hour units for teacher license renewal are the responsibility of the Department of Public Instruction, and graduate credit is offered by universities. The University of Wisconsin at Stevens Point organized an AdHoc Faculty Group of professionals from nature centers and other environmental organizations and agencies. Trainers in the AdHoc Group are paid for their efforts. They participate in a training program that prepares them to offer graduate level classes throughout the state, develop courses, and maintain a communication network.

What motivates teachers to attend EE inservice?
Continuing education units, college credit which contributes to salary increase, DPI equivalency clock hours for teacher license re-certification, and the presence of administrative support encourage teacher attendance. Financial incentives, like the National Science Foundation small stipend program also receive free graduate credit that pays teachers for attending classes, are important. Incentives that enhance professional status are also important and include awards programs and off-campus graduate programs for master teachers.

Teachers learn about workshops through newsletters, other courses, workshops such as Project WILD and Project Learning Tree (PLT), and friends and colleagues. Workshop mailings are included in the Wisconsin School District EE Network coordinated by the Wisconsin Center for EE at UWSP.

What are the needs of EE inservice providers?
Yockers would like to see more coordination among colleges and universities. He would like to sponsor an institute or conference for university environmental education/environmental science instructors to share materials, exchange course syllabi, and upgrade skills. Preservice is the key, he says, as there will soon be a high turnover in teachers in Wisconsin. Yockers believes there is a need for materials specific to undergradu-

ate science and social studies methods classes. There is also a need to coordinate efforts and to share products and services among universities, regional education agencies, and state agencies due to duplication of efforts and limited funding.

Are there state board of education guidelines for EE inservice?
There are no state guidelines for EE inservice. A state mandate requires teachers earning new teaching certificates in early childhood education, elementary and secondary science and social studies, and agriculture to obtain competencies in environmental content and environmental education methodologies. Most universities either insert additional material into existing required courses or design a new course and submit it to the Department of Public Instruction for approval.

School districts must have had an EE K-12 curriculum framework in place by 1990 including all subject areas, with greatest emphasis in science, social studies, art and health. Environmental education is one of the eleven areas, and the guidelines specify that environmental education should be infused into the other subject areas as well.

Is there a legislative mandate for EE inservice?
There is no mandate.

Other issues?
Yockers feels that many states may be doing similar things but that environmental education efforts and activities are not well coordinated among the states. He suggests that NCEET coordinate a communication network between state environmental education coordinators to provide guidance, insights, and information-sharing opportunities similar to the Council of State Science Supervisors that meets at National Science Teachers Association (NSTA) each year, and networks via computer (PSI-NET).

Wyoming

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How is EE inservice coordinated?
The Department of Education funds a number of the staff development programs and works with the University of Wyoming to develop teacher certification requirements. Because the University of Wyoming is the only university in Wyoming (there are seven junior colleges), the Department of Education and University personnel work closely together on developing teacher certification and re-certification programs.

Who provides EE inservice?
The Wyoming Department of Education provides teacher training and works with agencies and universities on teacher certification requirements but does very little curriculum development due to lack of staff and development time. The Wyoming Game and Fish Commission coordinates Project WILD, Project Learning Tree (PLT), and Project WET. The Bureau of Land Management and the United States Forest Service conduct inservice programs as well.

The Teton Science School is a non-profit school that works with the University of Wyoming to provide teacher pre- and inservice opportunities. In addition, the Wyoming Association for Environmental Education, a newly formed organization, and the Wyoming Outdoor Council, a consortium of special interest groups, provide inservice opportunities.

The University of Wyoming has a new, multidisciplinary environmental education degree program. The Wyoming Institute for Development of Teaching, affiliated with the University of Wyoming, also conducts teacher inservice.

Are credits available for EE inservice?
Teachers must renew their certification every five to ten years, depending on the subject area. Environmental education is not a requirement for certification or re-certification. However, teachers are encouraged to take environmental education courses at the University in their undergraduate program.

What motivates teachers to attend EE inservice?
Futrell believes intrinsic interest in the environment and re-certification credits motivate teachers to attend environmental education workshops. The Department of Education also tries to schedule workshops in places such as the Tetons to "capitalize on the natural environment to lure them [teachers] in."

What teachers are most and least likely to attend EE inservice?
He has seen less participation by social studies teachers than by science and math teachers. He attributes this, in part, to the fact that he himself networks more with math and science teachers since his position is Science and Mathematics Coordinator.

Futrell believes that secondary teachers are harder to motivate to attend inservices than are elementary teachers, and he attributes this to what he humorously terms the "mini professor syndrome" – secondary teachers are repeating the models of instruction in which they have participated through their own training.

What are the needs of EE inservice providers?
[no information given]

Are there state board of education guidelines for EE inservice?
The State Board of Education approved the *Learner Outcomes for Environmental Literacy* on January 1, 1992. These outcomes were created by a variety of groups including teachers, citizens, and state employees who work in the field of environmental education. The outcomes are not mandated but are, instead, suggested guidelines for voluntary incorporation into the classroom.

Is there a legislative mandate for EE inservice?
There is no state legislative mandate for EE inservice.

Other issues?
Futrell says he frequently defines environmental education as a subset of science. He has done this, not because he views environmental education as non-interdisciplinary, but because he believes he can fund environmental education more easily if it is associated with science than with social science. For example, he is able to fund environmental education out of Eisenhower funds. Futrell says it is harder to fund projects in the social sciences.

Appendix B

Questionnaire
Environmental Education (EE) Inservice/Staff Development

(Please note: for the purpose of this questionnaire, the abbreviation EE denotes environmental education. Inservice/staff development refers to both voluntary and mandatory educational opportunities for certified primary and secondary teachers.)

YOUR NAME _____ OFFICIAL TITLE _____

1. How many years have you been in your current position? _____ years

2. How primary is each of the following, in terms of your EE responsibilities? Please use the 1-5 rating scale below.

developing classroom curriculum	1 2 3 4 5
developing resource materials for teachers	1 2 3 4 5
developing inservices	1 2 3 4 5
delivering inservices	1 2 3 4 5
training inservice providers	1 2 3 4 5
fundraising	1 2 3 4 5
other (_____)	1 2 3 4 5

SCALE
1 = not at all primary
2 = modestly
3 = somewhat
4 = majorly
5 = very primary

3. What proportion of time, in your current position, do you allocate to all of your EE responsibilities? Check one.

____ 0-10% ____ 11-25% ____ 26-50% ____ 51-75% ____ 76-100%

4. Who, in your opinion, is most knowledgeable in your state regarding EE inservice/staff development? Please name yourself if applicable.

Name	Title	Organization/Affiliation	Phone

5. What computer technology does your agency use or support? Check all that apply.

____ CD-ROM's
____ free electronic information services (ie Internet)
____ on-line, subscription electronic information services
____ educational software or programs
____ other (_____)

6. Does your agency make use of or provide support for computer technology for any of the following activities, not limited to EE? Check all that apply.

____ teacher preservice
____ teacher inservice
____ communications
____ curriculum development
____ information resources for students
____ in-class, student activities (ie interactive CD-ROM's)

7. To what extent do each of the following groups **create EE teacher inservice materials** used in your state? Please use the 1-5 rating scale below.

state education agency	1 2 3 4 5	**SCALE**
regional education service centers	1 2 3 4 5	**1 = none**
colleges and universities	1 2 3 4 5	**2 = modest**
for-profit organizations	1 2 3 4 5	**3 = fair**
school districts	1 2 3 4 5	**4 = substantial**
regional/county natural resource units	1 2 3 4 5	**5 = primary**
state natural resource agencies	1 2 3 4 5	
federal natural resource agencies	1 2 3 4 5	
non-profit organizations	1 2 3 4 5	
other (_____)	1 2 3 4 5	

8. To what extent do each of the following groups **deliver EE inservice/staff development programs** in your state? Please use the 1-5 rating scale from Question #7 above.

state education agency	1 2 3 4 5	regional education service centers	1 2 3 4 5
school districts	1 2 3 4 5	state natural resource agencies	1 2 3 4 5
non-profit organizations	1 2 3 4 5	federal natural resource agencies	1 2 3 4 5
for-profit organizations	1 2 3 4 5	regional/county resource units	1 2 3 4 5
colleges and universities	1 2 3 4 5	other (_____)	1 2 3 4 5

9. Please list the three most **widely-attended** EE inservices and the agencies/organizations that **deliver** them.

Workshop Title	Organization/Agency Provider
a)	
b)	
c)	

10. Thinking of **all EE inservice/staff development** programs in your state, what combined percentage of these are Project Learning Tree (PLT) and Project WILD workshops? Check only one.

_____ 0-10% _____ 11-25% _____ 26-50% _____ 51-75% _____ 76-100%

11. How do teachers learn about available EE inservice/staff development programs? Please rate.

school district personnel	1 2 3 4 5	**SCALE**
word-of-mouth	1 2 3 4 5	**1 = not at all**
professional journals	1 2 3 4 5	**2 = rarely**
environmental/outdoor education association	1 2 3 4 5	**3 = occasionally**
teacher professional organizations	1 2 3 4 5	**4 = frequently**
computer network/electronic bulletin boards	1 2 3 4 5	**5 = primarily**
newsletter (_____)	1 2 3 4 5	
other (_____)	1 2 3 4 5	

12. Is there a **demand** for EE inservice not being met by existing inservice providers? (circle)

YES NO IF YES, please explain briefly the nature of the **demand**:

13. Is there a **need** for EE inservice not being met by existing inservice providers? (circle)

YES NO IF YES, please explain briefly the nature of the **need**:

14. In your opinion, what skills do **trainers** in your state currently **need to improve upon** most? Please rate.

workshop facilitation skills	1 2 3 4 5	**SCALE**
ability to model good teaching skills	1 2 3 4 5	**1 = no improvement needed**
understanding of classroom teaching	1 2 3 4 5	**2 = modest**
pedagogical skills	1 2 3 4 5	**3 = some**
knowledge of EE content	1 2 3 4 5	**4 = substantial**
knowledge of environmental issues	1 2 3 4 5	**5 = extreme improvement needed**
other (_____)	1 2 3 4 5	

15. Is the approach taken to providing EE inservice/staff development the **same** for: (circle)

a) inner city areas and non-inner city areas? YES NO

b) rural areas and non-rural areas? YES NO

c) teachers of students-of-color and teachers of non-students-of-color? YES NO

d) **Please explain** differences or similarities. Please add sheets if more space is desired.

Thank You!

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